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CONTENTS OF PREVIOUS NUMBERS

JANUARY, 1928 NUMBER 1

Lupoid Erythematosus: Some Observations on Its Etiology. J. M. H. MacLeod, M. D., London.
The Roentgen Ray in the Treatment of Skin Diseases. Howard Fox, M.D., New York.
Radium in Dermatology. O. H. Foerster, M.D., Milwaukee.
Ultraviolet Ray Therapy in Dermatology. Jos. Butler, M.D., Minneapolis.
The Erythema Dose of Radium. W. H. Guy, M.B., and F. M. Jacob, M.D., Pittsburgh.
Achromia Parasitaria. V. Pardo-Castello, M.D., and M. Martinez Dominguez, M.D., Havana, Cuba.
A Case of Generalized Steatoma. Leo D. Cady, M.D., St. Louis.
Acute Systemic Transverse Myelitis with Report of Two Cases. H. N. Cole, M.D., Cleveland.
Correspondence:
Unusual Reactions of the Ringworm Fungi. F. J. Gardner Hopkins, M.D., New York.
Abstracts from Current Literature.
Society Transactions:
Minnesota Dermatological Society.
Detroit Dermatological Society.
Index to Current Literature.

FEBRUARY, 1928 NUMBER 2

Xanthomas, Tuberculous, Two Autopsies Disclosing Lesions of the Central Nervous System and Other Tissues. Fred D. Weidman, M.D., and Walter Freeman, M.D., Philadelphia.
Newer Physiology of the Skin with Special Reference to the Action of Ultraviolet Light. C. Guy Lane, M.D., Boston.
The Value of the Kahn Precipitation Test in the Diagnosis of Primary Syphilis and Its Adaptation to Local Fluids. Joseph A. Elliott, M.D., and Lester S. Todd, M.D., Charlotte, N. C.
Comparative Spirochetacidal Activity of Salts of Metals Not Heretofore Studied in the Treatment of Experimental Rabbit Syphilis. Joseph V. Klauder, M.D., Philadelphia.
Treatment of Early Syphilis. R. G. Irvine, M.D., Minneapolis.
A Case of Diffuse Scleroderma Presenting Unusual Features. Charles Wallerg Williams, M.D., New York.
Histologic Changes Produced Experimentally in Rabbits by Fed Salts of Potassium and Sodium. John A. Kolmer, M.D., and Baldwin Lucke, M.D., Philadelphia.
Abstracts from Current Literature.
Society Transactions:
New York Academy of Medicine, Section on Dermatology and Syphilis.
Chicago Dermatological Society.
Boston Dermatological Society.
Cleveland Dermatological Society.
Bohemian Dermatological Society in the Czecho-Slovak Republic.
Vienna Dermatological Society.
Book Reviews.
Index to Current Literature.

MARCH, 1928 NUMBER 3

The Dermatologic Aspects of Rat-Bite Fever. Paul A. O'Leary, M.D., Rochester, Minn.
Syphilus Vulgaris with Findings in the Spinal Cord Suggesting the Etiology of the Skin Lesions: Report of a Case. George W. Covey, M.D., Lincoln, Neb.
A Comparative Study of the Histologic Changes Produced Experimentally in the Liver and Kidneys of the Rat by Arsphenamin and Neo-Arsphenamin. John A. Kolmer, M.D., and Baldwin Lucke, M.D., Philadelphia.
XXXVI.—Patient with Diabetes Dermatitis Treated with Insulin. William D. Davis, M.D., and Thomas J. Allison, M.D., St. Louis.
The Pathogenesis of Dermatitis, Including Eczema: A Case of English Ivy Poisoning. Walter James Highman, M.D., New York.
Studies in the Treatment of Congenital Syphilis. John A. Fordyce, M.D., and Isadore Rosen, M.D., New York.
A Study of Some of the Inorganic Salts in the Blood in Psoriasis and in Eczema, Other Dermatoses. Jay Frank Schamberg, M.D., and H. Brown, B.Sc., Philadelphia.
Abstracts from Current Literature.
Society Transactions:
Pittsburgh Dermatological Society.
Philadelphia Dermatological Society.
St. Louis Dermatological Society.
Correspondence:
"A Hitherto Undescribed Condition of the Fingers." John Fordyce, M.D., New York.
Book Reviews.
Index to Current Literature.

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Archives of Dermatology and Syphilology

VOLUME 9 APRIL, 1924 NUMBER 4

THE HISTOGENESIS OF KERATODERMA BLENNORRHAGICUM *

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Since 1893, when Vidal [1] observed and recorded the first case of "keratodermie blenorrhagique," only fifty-eight cases have been described. In making an entity of this disease, Vidal detailed a generalized and symmetrical eruption of cornified crusts with falling of the nails, associated with a urethritis and polyarthritis of gonorrheal origin. The patient was bedridden, markedly emaciated and had in addition a conjunctivitis and blepharitis. He was particularly interested, however, in the cutaneous manifestations and referred to them in detail. The eruption was composed of hard cornified dry crusts without traces of moisture. These were small and disseminated on the head, face and trunk. On the extremities, the crusts were larger and more abundant, and the hands and feet were particularly attacked. The palmar surfaces presented yellow brown crusts, some discrete and some confluent. The fingers were unequally involved, but the distal phalanges were covered with a thick cornified crust which lifted up the nails. The smaller lesions were semitransparent and resembled small droplets of yellow wax. Removal of the crust revealed a papule, which was verrucous and dry or slightly humid.

Only exceptionally did Vidal see the crust preceded by vesicles or vesicopustules, and the patient stated that they had been preceded neither by vesicles nor bullae. Microscopic examination of the cornified crusts revealed a stratification of the horny layer resembling a cutaneous horn.

Bacteriologic examination of several lesions was negative. The rupial character of the papules and the general adenopathy present led Vidal to institute antisyphilitic therapy without, however, influencing the course of the eruption or the lesions present. With the subsidence

* Studies and contributions of the Department of Dermatology and Syphilology of the University of Michigan, service of Dr. Udo J. Wile.

1. Vidal: Eruption generalisée et symetrique de croutes cornées avec chute des ongles d'origine blennorrhagique, coincidant avec une polyarthrite de même nature. Recidive ā la suite d'une nouvelle blennorrhagie deux ans après la guerison de la prèmiere maladie, Ann. de dermat. et d. syph. **4**:3, 1893.

of the blenorrhagiæ and arthritis, involution of the cutaneous manifestations occurred. However, thirty-two months later a recurrence of the gonorrheal urethritis, polyarthritis and exanthem was observed by Vidal in the same patient.

Since the original report, Jeanselme,[2] Jacquet and Ghika,[3] Chauffard,[4] Robert,[5] Launois,[6] Stanislawsky,[7] Malherbe,[8] Baermann,[9] Roth,[10] Chauffard and Froin,[11] Wadsack,[12] Chauffard and Fiessinger,[13] Rivet and Bricout,[14] Sequeira,[15] Williams,[16] Little and Douglas,[17] Rost,[18] Arning and Meyer Delius,[19] Robin and Fiessinger[20] have reported cases. The first American case of this unusual condition was reported

2. Jeanselme: Troubles trophiques dans la blenorrhagie, Ann. de dermat. et syph. **6**:525, 1895.

3. Jacquet and Ghika: Sur un cas d'arthro-blennorrhagisme avec troubles trophiques, Soc. med. des. hôp. de Paris **14**:93, 1897.

4. Chauffard: Infection blennorrhagique avec productions cornées de la peau, Soc. med. hôp. de Paris **14**:569, 1897.

5. Robert: Contribution a l'étude des troubles trophiques cutanée dans la blennorrhagie, These de Paris, April 28, 1897.

6. Launois: Arthropathies recidivantes amyotrophie generalisée, troubles trophiques multiples d'origine blennorrhagique, Soc. med. des. hôp. de Paris **16**:736, 1899.

7. Stanislawsky: Ueber einen Fall von gonorrhoischer. Urethritis mit Affection der Gelenke, symmetrischen hornartigen Ausschlag und Ausfallen der Nagel, Monatsbericht über die Gesamtleistungen a. d. Gebiete der Erkrankungen des Harn und Sexual apparates, **5**:643, 1900.

8. Malherbe: Uréthrites à gonocoques récidivantes, arthropathies multiples, troubles trophiques cutanés cornés, Gaz. méd. de Nantes **19**:43, 1900.

9. Baermann: Ueber hyperkeratotischen Exantheme bei schweren gonorrhoischen Infectionem, Arch. f. Dermat. u. Syph. **69**:363, 1904.

10. Roth: Zur Kasuistik des "hyperkeratotischen" gonorrhoischen Exanthems, München. med. Wchnschr. **52**:104, 1905.

11. Chauffard and Froin: Sur la keratose blennorrhagique, Arch. de méd. exper. et d'anat. path. **18**:609, 1906.

12. Wadsack: Ein gonorrhoisches Exanthem, Berl. klin. Wchnschr. **43**:966, 1906.

13. Chauffard and Fiessinger: Deux cas de keratose blennorrhagique. Reproduction expérimentale et de la lesion cutanée, Bull. soc. franç. de dermat. et syph. **20**:162, 1909.

14. Rivet and Bricout: Sur un cas de keratose blennorrhagique, Bull. méd. **23**:851, 1909.

15. Sequeira: Keratodermie blennorrhagique, Brit. J. Dermat. **22**:139, 1910.

16. Williams: Gonorrheal Keratosis of Hands and Feet, Proc. Roy. Soc. Med., London **4**, Pt. 1, 12, 1911.

17. Little and Douglas: Keratodermia blenorrhagica in a Young Man, Proc. Roy. Soc. Med., London, **5**, Pt. 1, 8, 1911.

18. Rost: Seltene Komplikationen der Gonorrhoe, hyperkeratotische Exantheme und universelle ankylosierende Arthritis, Dermat. Ztschr. **18**:3, 1911.

19. Arning and Meyer Delius: Beitrag zur Klinik der gonorrhoischen Hyperkeratosen, Arch. f. Dermat. u. Syph. **108**:56, 1911.

20. Robin and Fiessinger: Keratose blenorrhagique des mains, Bull. Soc. med. d. hôp. de Paris **31**:141, 1911.

Fig. 1.—Heavily crusted confluent eruption of scalp, resembling an extensive seborrhea.

Fig. 2.—Involvement of soles with heavy cornified crust, simulating a relief map.

by Simpson [21] in 1912. To Roark [22] goes the credit of recording the second case in 1916. Haase [23] described the third case in the American literature before the American Dermatological Association. This case was of unusual interest because of the extensive involvement and the fact that the author was able to observe the patient during an acute exacerbation. He was not, however, able to confirm the opinion

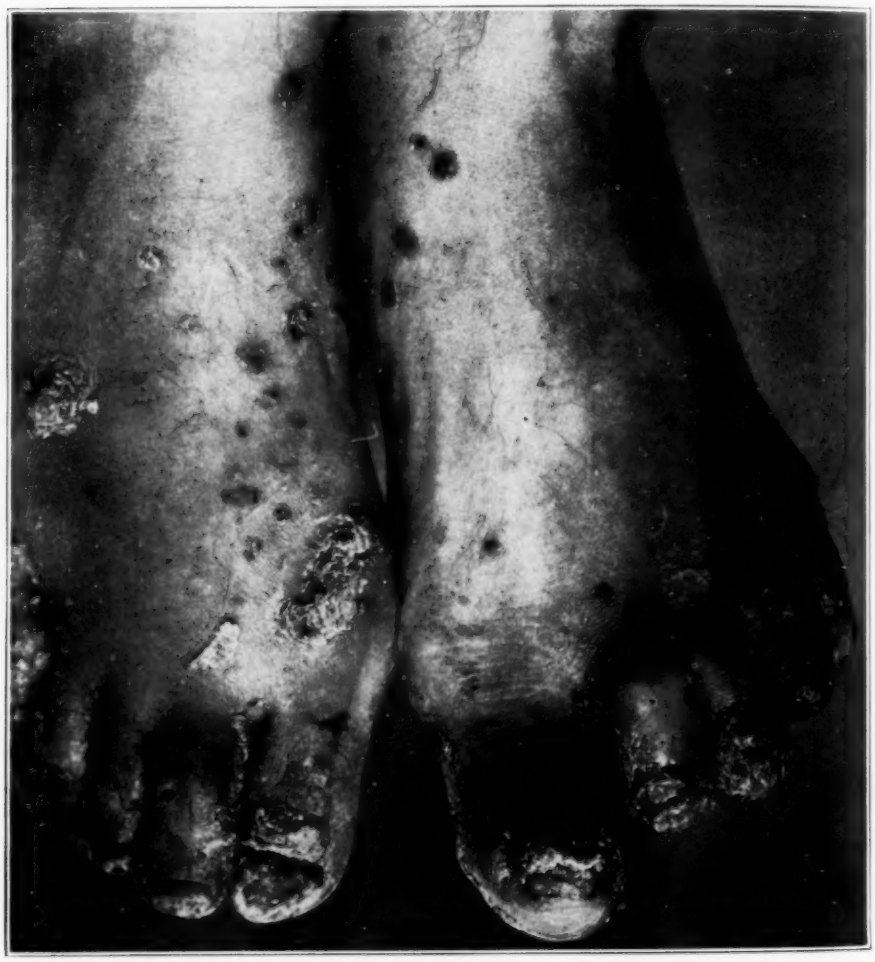

Fig. 3.—Rupialike character of the scale, with involvement of the nails.

21. Simpson, F. E.: Keratodermie blenorrhagique, J. A. M. A. **59**:607 (Aug. 24) 1912.

22. Roark, B. H.: Blennorrhagic keratosis, J. A. M. A. **59**:2039 (Dec. 7) 1912.

23. Haase: Keratosis blenorrhagica, J. Cutan. Dis. **34**:819, 1916.

advanced by Sabotka [24] and Arning and Meyer Delius [19] that the initial stage of all lesions was a vesicle. Chauffard and Fiessinger's [13] experiment was reproduced, as new lesions followed abrasion of the skin and inoculation with the serum obtained from beneath the crust of an old lesion. He further stated that any abrasion of the skin during the height of the eruption would determine the location of a new lesion, as the minute burn from a cigaret spark.

Additional cases have since been reported by Gourgerot and Meaux Saint-Marc,[25] Swift,[26] Hodara,[27] Buschke,[28] Zieler,[29] Brault,[30]

Fig. 4.—Characteristic heaping up of waxy honeycomb scale beneath nail plate.

24. Sabotka: Pustulos-hyperkeratotisches Exanthem bei gonorrhoischer Allgemeinerkrankung, Dermat. Wchnschr. **56**:181, 1913.

25. Gougerot and Meaux Saint-Marc: Keratose blennorrhagique disseminée guerison, Ann. d. mal. ven. **7**:11, 1912.

26. Swift: Case of Keratodermia Blennorrhagica, Australasian med. gaz. **32**:549, 1912.

27. Hodara: Ein Fall von Gonokokamie und generalisiertem gonorrhoischem Exanthem, Dermat. Wchnschr. **55**:397, 1912.

28. Buschke: Ueber universell symmetrische entzündliche Hyperkeratosen auf uro-septischer und arthritischer Basis, Arch. f. Dermat. u. Syph. **113**:223, 1912.

29. Zieler: Die gonorrhoischen Allgemeinerkrankungen, Med. Klin. **8**:219, 1912.

30. Brault: Keratose blennorrhagique chez un indigene, Bull. Soc. franç. de dermat. et syph. **24**:146, 1913.

Haslund,[31] Jensen,[32] Selenew,[33] Sabotka,[34] Williams,[34] Lange,[35] Gibbs,[36] Buschke and Michael,[37] Nathan,[38] Brown and Hargreaves,[39] Simpson and Beeson,[40] Lundie,[41] Brown and Davidson,[42] Woodward,[43] Dawson and Brown,[44] Beaumont,[45] Dyke,[46] Levy-Franckel,[47] Tremoliers,[48] Isaac,[49] Lees,[50] Gager,[51] Lindeman,[52] McDowell[53] and quite recently Kretschmer,[54] Stillians and Zeisler.[55]

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31. Haslund: Et tilfaelde af generalisieret gonokokikinfektion med keratoser, Ugesk. f. Laeger **75**:325, 1913.

32. Jensen: Kutane manifestationer ved gonorre, Hospitalstidende **6**:534, 1913.

33. Selenew: Muskel atrophie, Muskel-rheumatismus, Arthritis, Keratosis der fussohlen bei einem gonorrhoischen Patienten, Ztschr. f. Urol. **7**:477, 1913.

34. Williams: Keratodermia Blennorrhagica, Brit. M. J. **2**:627, 1914.

35. Lange: Ein Fall von Hyperkeratosis gonorrhoica, Deutsch. med. Wchnschr. **40**:495, 1914.

36. Gibbs: A Case of Keratodermia Blennorrhagica, Brit. Dermat. **26**:433, 1914.

37. Buschke and Michael: Zur Kenntnis der hyperkeratotisch vesikulosen Exanthem bei Gonorrhoe, Arch. f. Dermat. u. Syph. **120**:348, 1914.

38. Nathan: Ueber einen Fall von hyperkeratotischen Exanthem bei Gonorrhoe und Lues, Arch. f. Dermat. u. Syph. **121**:906, 1915-1916.

39. Brown and Hargreaves: A Case of Gonorrheal Keratosis, Brit. J. Dermat. **29**:107, 1917.

40. Simpson and Beeson: Keratodermie Blennorrhagique, J. A. M. A. **68**: 1169 (April 21) 1917.

41. Lundie: Two Cases of Keratodermia Blennorrhagica, Brit. J. Surg. **5**:389, 1917.

42. Brown and Davidson: A Case of Gonorrheal Keratosis, Brit. M. J. **2**:453, 1917.

43. Woodward: A Case of Gonorrheal Keratodermia, Lancet **1**:294, 1918.

44. Dawson and Brown: Three Cases of Gonorrheal Keratosis, J. Roy. Army Med. Corps, Lond. **33**:71, 1919.

45. Beaumont: Keratodermia Blennorrhagica, Lancet **11**:502, 1919.

46. Dyke: Keratodermia Blennorrhagica, Lancet **2**:328, 1919.

47. Levy-Franckel: Keratodermie Blennorrhagique, Ann. d. mal. ven., Paris **13**:385, 1918.

48. Tremoliers: La keratose blennorrhagique, Ann. d. dermat. et syph. **7**:145, 1918-1919.

49. Isaac: A Case of Keratodermia Blennorrhagica in a Woman, Brit. J. Dermat. **32**:195, 1920.

50. Lees: Keratodermia Blennorrhagica, Edinburgh M. J. **28**:99 (April 1) 1922.

51. Gager, E. C.: Keratodermia Blennorrhagica, J. A. M. A. **78**:941 (April 1) 1922.

52. Lindeman: Keratodermia Blennorrhagica, Med. J. Australia **1**:126, 1922.

53. McDowell: Keratosis Blennorrhagica, New York M. J. **115**:518, 1922.

54. Kretschmer, H. L.: Keratodermia Blennorrhagica, J. A. M. A. **80**:993 (April 7) 1923.

55. Stillians and Zeisler: Gonorrheal Keratoderma, Arch. Dermat. & Syph. **8**:393 (Sept.) 1923.

A large number of these cases do not correspond in detail with the original description by Vidal, in addition to which a great many of the cases reported do not include either a bacteriologic report or a histopathologic study.

Fig. 5.—Evolution of the vesicle. Some of the older pustules show the central umbilication.

Four types of cutaneous involvement have been described in association with gonorrhea: (1) simple erythema—the most frequent form, even when toxic erythema resulting from medication has been ruled out, (2) lesions simulating urticaria and erythema nodosum, (3) hemorrhagic and bullous exanthems, and (4) hyperkeratoses.—The lesions of this group are thought to be specific. We shall confine ourselves to a

discussion of the last group of eruptive phenomena, which Vidal included as a part of his picture of keratodermie blennorrhagique.

The case herein detailed is of unusual interest in that we have been able to observe repeated exacerbations of the eruption, and to follow, we believe, the cycle of the individual lesions.

CASE REPORT

History.—A. R., a man, aged 30, an American, a butcher, entered the hospital of the University of Michigan in November, 1920, complaining of a urethral discharge and painful knees and ankles. He had his first attack of gonorrhea in 1913, at which time treatment was instituted twenty-four hours after the appearance of the discharge. This promptly lessened in amount, but two weeks later he had a sudden, painful swelling of both testes. Five weeks from the onset of the discharge, stiffness and pain were noted in the right knee. Soon afterward the right ankle and then the left knee and ankle were involved, and the patient was confined to bed. During the succeeding three years the urethral discharge and arthritis were present almost continuously. At the end of that period he spent three months in Hot Springs, where he was vigorously treated for blennorrhea and arthritis. He returned to his home without crutches.

In April, 1920, the urethral discharge and joint symptoms reappeared, and on November 3 of the same year he entered the University Hospital and was assigned to the service of genito-urinary surgery. Examination at that time showed the patient to be suffering with a chronic urethritis, gonorrheal in origin, urethral stricture and a painful arthritis of both ankles.

There was no skin condition present at the time of this examination. External urethrotomy for stricture was performed, from which the patient had an uneventful recovery. Both ankles were immobilized with plaster casts, and shortly afterward the patient left the hospital.

In December, 1921, the patient had a recurrence of the urethral discharge, notwithstanding continuous treatment, and at this time every joint in the body was seemingly involved. He has been bedridden since that time. About this time he noticed an excessive scaling of the scalp and a few pustules. About the same time he also observed the formation of "callosities" on the soles, which were easily removed by soaking. They would, however, soon reform; by March, 1922, his soles were "caked," and they have changed little since that time. About March 1 the patient noticed that the nail of the great toe on both feet was raised and slightly painful. This he thought was an ingrowing nail, and on attempting to lift the nail, the distal half, together with the yellow crust, came off, leaving a raw surface. A few days later the nail of the thumb of the right hand was similarly involved and presented a waxy crust. In the course of several weeks all the nails were similarly affected.

In June, 1922, there appeared on the dorsal surface of the right hand a pinhead sized, raised, reddened lesion, which the patient states promptly became pustular, soon forming a crust without rupture. Similar lesions now appeared on the other hand and on the dorsal surface of the feet, crusts forming soon. This condition was slowly progressive, until he entered the hospital. He was unable to state definitely whether any of the lesions were vesicular in character in their incipiency.

Examination.—The patient was in bed in a recumbent position, slightly on the left side, with the head in moderate flexion. The forearms were at an angle of 135 degrees, with the thighs and knees both held in flexion. He had the appearance of one long confined to his bed and showed a marked degree of emaciation. His color was fair, with some pallor of the lips, the voice was firm and strong; hearing was good, and he was mentally alert. The large and small joints of the extremities showed various degrees of involvement of a definite hypertrophic process. The overlying skin was stretched and slightly glistening, but apparently did not share in the arthropathy. There was con-

Fig. 6.—Soles after maceration of the crustlike scale with wet dressings, showing a few scattered pustules.

siderable pain in attempting manipulation, and there was almost complete anklylosis of some of the joints. There was some local heat, but no visible signs of inflammation. Roentgen-ray examination of the involved joints revealed the process to be a hypertrophic arthritis. The remainder of the physical examination was essentially negative. The heart and lung examination was negative clinically and roentgenologically, although the patient gave a positive reaction to old tuberculin.

Examination of the skin revealed an unusual eruption which had a marked predilection for the scalp, hands and feet. The scalp, especially the frontal and vertex regions, with extension just onto the forehead, was involved in a heavily

crusted confluent eruption. The crust was yellow, heaped up, closely adherent and was situated on a subacutely inflammatory base. The picture here simulated closely an extensive seborrhea. This crust on removal left an extremely superficial erosion of the epidermis with slight exudation of serum, but no hemorrhage. The material removed consisted of a heaping up of heavy greasy scales which were cemented together with a serous exudate. This crustlike scale was everywhere pierced with hair shafts, the follicles of which were apparently intact. There was no alopecia, although the hair, which was closely clipped, was thinned and lusterless.

On the dorsal surface of each hand were about a half dozen discrete split pea to dime sized sluggish papules, the most striking feature of which was the thick, yellow scale. In the smaller and apparently younger lesions, the scale was peripherally arranged, while the center presented a slight depression. These younger lesions seemingly contained a small amount of purulent material, but removal of the crusts revealed only a denuded serous covered papule. The older lesions showed a heavier crusting with an admixture of blood, serum and scales.

On the nail of the first, third and fourth fingers of the right hand and on the thumb nail on each hand there was an unusual looking lesion. Apparently the process started beneath the nail plate with a heaping up of a yellow waxy honeycomb material, which was dry and brittle, and seemingly consisted of many scales. This lesion attained its greatest height at the free border of the nail and raised the nail plates in a sloping fashion. The plate was brittle, and the distal portion was soon broken and jagged. The entire digit shared in the inflammation, thickening and desquamation, which however, was most marked periungually. The lesion of the nail somewhat resembled that seen in favus.

On both feet, particularly on the toes and heels, there was an extensive yellow, crustlike, tenacious scaling, which almost entirely involved the first digit, with obliteration of the nail. The anterior half of both soles and the entire heel of each foot were covered with one large plaque of the scale just described. Here the lesion was raised approximately one-fourth of an inch above the surrounding integument. Removal of this scale revealed a superficially denuded surface, with some serous oozing, slight hemorrhage and a verrucous base, as if the whole scale had not been entirely removed. The dorsal surfaces of the feet, particularly of the right foot, presented about a half dozen discrete pea to dime sized papules with heavy yellow scaling, suggesting somewhat the rupial syphilid. All of these lesions were rather superficial, only slightly infiltrated and entirely painless on manipulation.

On the genitocrural region on both sides there was a process which closely simulated the eruption on the scalp, except that here the scale was not so well defined, and the moisture of the region gave the confluent lesions an eczematoid appearance. The prepuce, especially the dorsal surface, showed some desquamation, but no definite papules were to be seen. On the skin over the coccyx and about the anus there was a superficial eczema-like process almost similar to that described in the genitocrural region. The upper part of the chest, shoulders, back and outer surface of the upper arms showed many pin point to pinhead sized, slightly erythematous papules and papulopustular lesions. On the face, especially on the nose, forehead and cheeks were numerous minute, scarcely perceptible papules, which were covered with a yellowish, greasy scale. At the time of this examination no vesicles were demonstrable.

Examination of the patient's blood revealed: hemoglobin, 55 per cent.; red blood cells, 3,900,000; white blood cells, 21,000. A blood smear showed platelets definitely increased and red cells achromatic but not otherwise abnor-

mal. Eosinophils were at the upper limit of normal, but there was no change in other white blood cells. The complement fixation test for gonorrhea was four plus. The Wassermann reaction and Kahn test of the blood were negative. Urinalysis was negative, except for some shreds and many white blood cells.

The patient was seen by Dr. Hugh Cabot at this time, who found the urethra slightly below normal in size, in addition to which the patient had a prostatitis and a seminal vesiculitis. High fluid intake, mercurochrome injections (1 per cent., three times a day) and oil of santal, 5 minims (0.3 c.c.), three times daily, were advised, together with frequent dilatation and massage. Dr. Cabot felt that a vesiculotomy might be performed later, provided the patient's general condition improved.

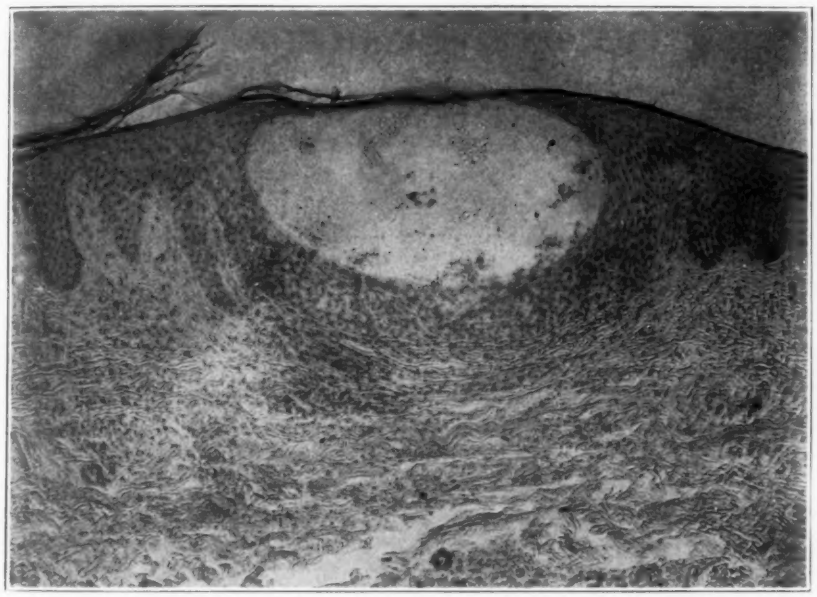

Fig. 7.—Rounded vesicle in upper portion of the prickle cell layer. Contents consist for the most part of serum.

Course of Disease.—The treatment was immediately started, together with massive wet dressings of potassium permanganate, colloidal baths and high caloric diet. The heavy scale was soon macerated and removed, leaving a raw, denuded, erythematous surface, which was slightly painful. By November 1, the urethral discharge had greatly diminished, but the patient still complained of painful joints. Early in December, the urethral discharge returned, and almost simultaneously he complained of excruciating pain in the involved joints. In the second week in December, there appeared on both dorsal and ventral surfaces of the hands and wrists and on the dorsal, lateral and plantar aspects of the feet many pinpoint to pinhead sized lesions which were definitely vesicular in character. Within twenty-four hours the contents of these lesions became cloudy, and soon unquestionable pustules were formed. As these lesions slowly enlarged and attained the size of a glass headed pin, a central depression or umbilication occurred in each lesion. As the center became depressed, it took

on a brownish color, and it was definitely determined that the heavy greasy scale of the adult lesion was formed in this manner. Surrounding this young scale was a ring of apparent pustulation, but rupture of the overlying epidermis disclosed only a small amount of thick, white, cheesy desiccated tenacious material. The central flat topped brownish depression increased in size, with coincidental decrease in the size of the surrounding pustule, until the latter became merely a ring of denuded epidermis surrounding this central raised crustlike mass. Removal of this mass liberated a small amount of tenacious purulent material and revealed the erythematous nonulcerative slight oozing base seen under the original heavy scales. These lesions soon coalesced with neighboring similar lesions, and the picture described at the time of entrance was seen again.

The lesions continued to appear for about four weeks, when a gradual cessation occurred coincidental with the diminution of the amount of the urethral discharge and a lessening of the joint pains.

Then a period of three weeks elapsed during which time no new lesions appeared, but at the end of that period a second crop appeared, less extensive than the first, involving especially the hands and feet. This was again associated with a flare-up of the joint symptoms and an increase in the amount of urethral discharge. It was now obvious that many more joints were being involved, and extensive deformity was occurring in the small joints of the hands and feet. He continued to lose weight and strength and was indeed a most abject and pitiable sight. For some weeks he seemed to lose ground steadily, and it was thought that he might succumb, but with the subsidence of the second crop of lesions his general health improved, and he was able to be up in a wheel chair a short time each day. These pustules evolved exactly as did those described above, ending finally in typically cornified crusts. Since that time new lesions have appeared almost daily, and the condition is gradually becoming universally distributed.

Treatment.—Unfortunately, no form of treatment seems to influence favorably the progress of the eruption. In order to diminish the fetor, potassium permanganate dressing and colloidal baths were used. The crusts and retained secretions were thus removed, leaving a moist reddened surface which was in part covered with yellowish brown shreds of epidermis. Various other forms of wet dressings were used, but none seemed to act as well as potassium permanganate, especially with regard to its deodorizing qualities. Sulphur resorcin paste was tried locally as suggested by Simpson,[21] but seemed to exert no influence on the eruption other than softening of the crusts. Supportive measures and various stimulants were used as indicated. His daily caloric intake has been high. Mercurochrome, sandalwood oil, forced fluids, prostatic massage and urethral dilatation were directed toward the control of the urethral discharge. Gonococcus vaccine and antigonococcus serum were both used, with no appreciable effect on the eruption or the associated arthritis.

Bacteriologic Study.—Repeated efforts were made to prove that the gonococcus was responsible for the cutaneous manifestations but at no time were our efforts attended with success.

Blood cultures, both during an exacerbation and following it, were negative, and one culture from a well developed lesion showed a gram-positive organism. Aspirated material from young and older lesions when stained revealed no gonococci.

Numerous attempts were made to produce cutaneous lesions. The skin was abraded, and on the surface so prepared, material from recent and well developed lesions was inoculated. In no instance was a definite take obtained either beneath the watch glass or without the watch glass.

Pathology.—In all, ten pieces of tissue were removed for microscopic study in an attempt to study the histogenesis of the lesions, which we have stated was initiated by a minute vesicle. Alcohol and formaldehyd fixation was used, and the sections were embedded in paraffin. Polychrome methylene blue and hematoxylin eosin were employed almost entirely for staining, although a few special stains were used.

In a general way the fundamental changes occur as follows: First, there is epidermal vesiculation with leukocytic reaction in the cutis. This is almost

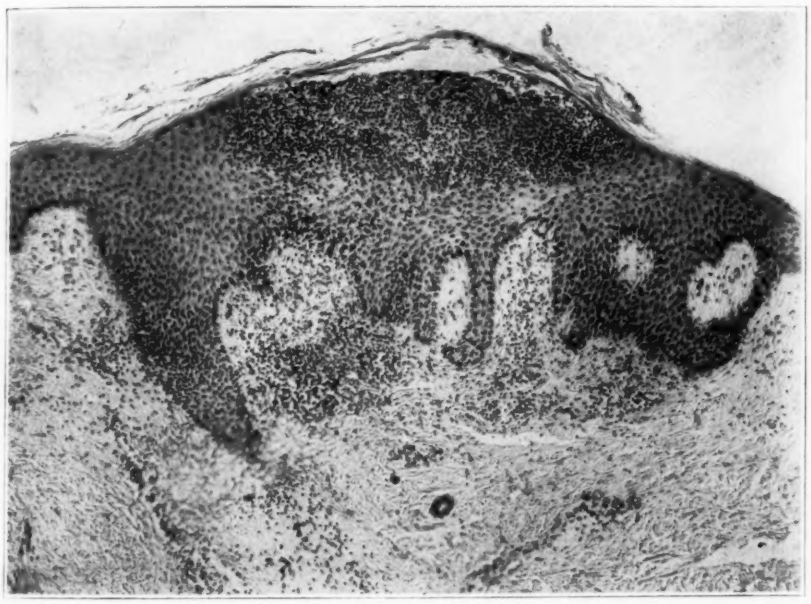

Fig. 8.—Early pustule; roof showing signs of disintegration. Contents consist mainly of polymorphonuclear and mononuclear cells. A moderate reaction in the cutis.

immediately followed by turbidity, pustulation and rapid drying down of the exudate, with the formation of lamellar crusts, closely resembling "rupia." The next stage in the rapid evolution of the lesion consists in the throwing off of the crust and resulting slight epithelial atrophy.

Coalescence of the individual lesions occurs frequently with the formation of massive pustules and large rupialike crusts.

The minute changes occur in the following stages:

1. Stage of Vesiculation: The earliest lesion begins in the upper portion of the prickle cell layer, as shown in Figure 1. The vesicle is rounded and shows a distinct roof of one or two layers of prickle cells, overlying which is a thinned stratum corneum. The base of the vesicle is made up of a moderately acanthotic

epithelium. The contents at this stage are for the most part serum with a few polymorphonuclear and mononuclear leukocytes. Below and immediately surrounding the vesicle in the corium there is a distinct infiltration composed mostly of mononuclear lymphocytes, with a few polymorphonuclear neutrophils and plasma cells.

2. Stage of Pustulation: The next stage in the development is the rapid evolution of pustulation, which is well shown in Figure 2. The vesicular roof now shows signs of disintegration, and the lesion is now filled completely with polymorphonuclear and mononuclear cells, together with a small amount of fibrin. The rete pegs immediately below the lesion are thickened and invaded by small round cell leukocytes and a few plasma cells, and the reaction in the cutis is more marked, extending well up into the interpapillary tufts

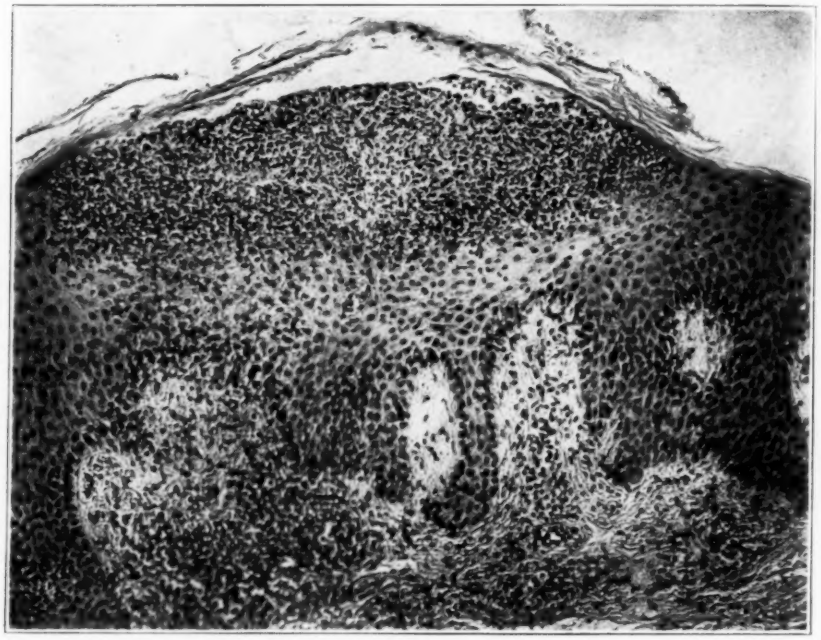

Fig. 9.—Older pustule; further disintegration of roof, with increase in pustular content and acanthosis.

Following this stage a little further we find a well developed pustule, as shown in Figures 3 and 4. The contents of this pustule, which are about to break through the overlying thin stratum corneum, show a beginning disintegration with increase in pustular content, fibrin and cells, leading to crusting.

3. Stage of Crusting: This is shown in Figure 5. In this stage of the development of the lesions there is a beginning formation of a thick crust due to the drying of its purulent content, together with considerable parakeratotic epithelium. Confluence of adjacent lesions has occurred, with a marked increase in cuticular reaction and edema of the interpapillary tufts. Figure 5 shows not only the pustule with parakeratotic coverings, but its underlying cellular derivative in the form of a rapidly drying exudate. In addition, the corium

presents a slight but definite mononuclear cellular infiltrate about the follicles, glands and vessels, while the last show a decided thickening of the vessel wall. Older crusted lesions show a marked flattening of the horny covering, with beginning separation. The thickened and elongated rete pegs and collagen increase are striking features of the late crusting stage. The last stage of the disease is represented by a slight degree of atrophy in the larger lesions, resulting from healing below the rupial crust which is then thrown off. In connection with previous histologic studies, we can confirm Haase's [25] findings of parakeratosis as the predominating epithelial change.

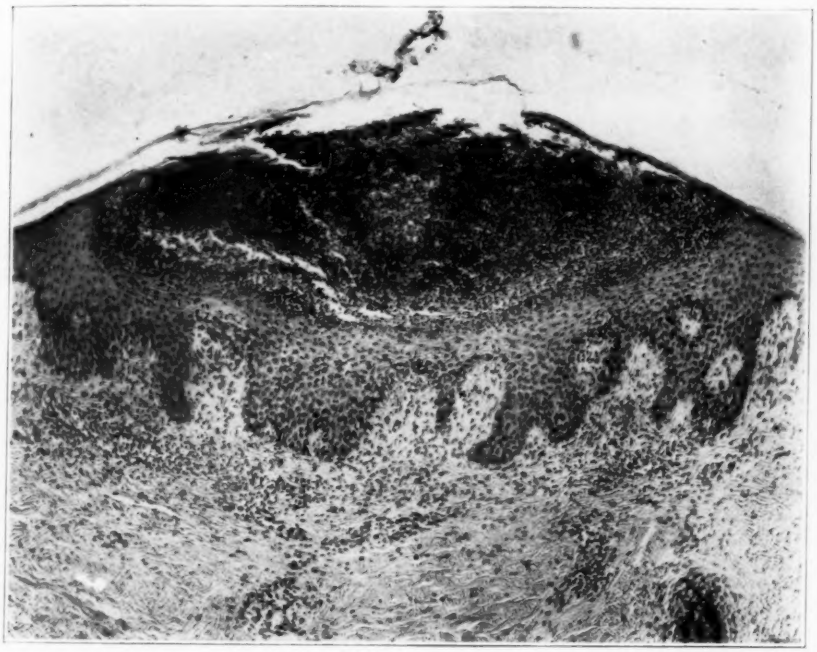

Fig. 10.—Late pustule; disintegration of roof with increase in fibrin and drying down of the pustular content.

ETIOLOGY

It is generally assumed that the gonococcus is directly responsible for the production of the typical cornified crusts, although the etiologic relationship has not been absolutely proved. Chauffard and Fiessinger [13] believe that we may assume a septicemia in the presence of a severe arthropathy, although the gonococcus has only rarely been recovered from the blood stream even during an acute exacerbation of the eruption. Roark [22] found in only one tube a watery growth which yielded a pure culture of gram-negative diplococci. He does not, however, attach any significance to this single finding.

Scholtz [56] was able to take cultures of the gonococcus from "connective tissue abscesses" in a patient with gonorrheal urethritis which was associated with skin manifestations of the urticarial and erythema multiforme type.

Hodara's [7] case was of the same type as that described by Scholtz;[56] there was no joint involvement, but a gonorrheal urethritis was present.

He was able to recover the gonococcus in blood smears, but states definitely that he was not able to find the organism in the vessels of the cutis.

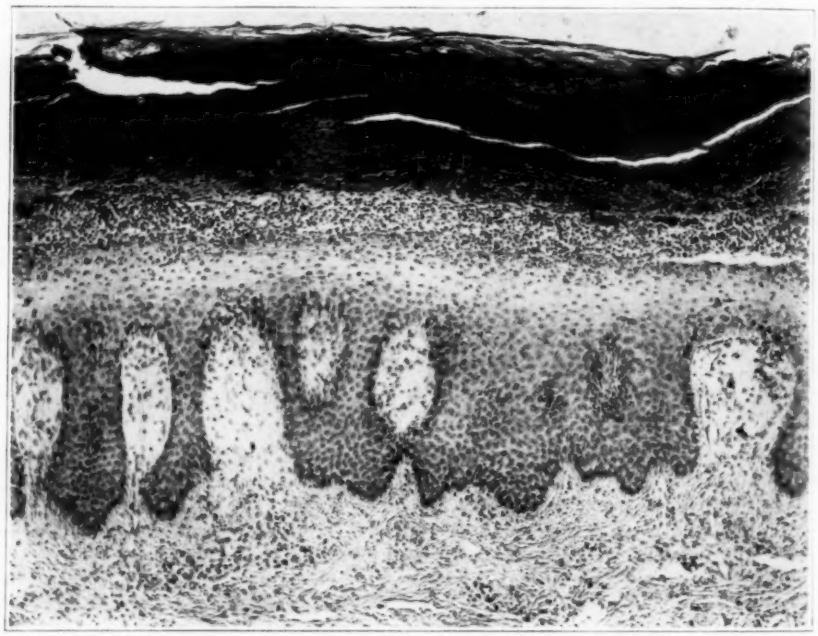

Fig. 11.—Formation of thick crust and its underlying cellular derivative, together with considerable parakeratotic epithelium. Also marked acanthosis and edema of the interpapillary tufts.

Wadsack [12] apparently has been the only one who has isolated the gonococcus from the cutaneous lesions of true keratoderma blenorrhagicum. He found a gram-negative diplococcus on microscopic examination of the "efflorescence."

Gager [51] simply states that "smears from the pustules on the skin as well as from the urethra contained extracellular gram negative diplococci."

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56. Scholtz: Beitrage zur Biologie des Gonococcus, Arch. f. Dermat. u. Syph. **49**:1, 1899.

SEX AND AGE INCIDENCE

The condition occurs almost exclusively in the male sex. Lees [56] reported a case in a woman, aged 63, who had arthritic symptoms, but there was no positive evidence that the patient had gonorrhea. The complement-fixation test for gonorrhea in this case was negative. Isaac's patient was a woman, aged 28, who had an acute painful polyarthritis and presented lesions beneath each breast and in the dorsal surface of both feet. The lesions which evolved from split pea sized bullae were typical hornlike excresences. She had a vaginal discharge, and at the time her husband had an acute attack of gonorrhea.

All the patients have been adults, except in Robert's [5] case, concerning which there is question as to classification.

DISTRIBUTION

By far the greatest number of reported cases have been of the localized type, involving the hands, the feet or some other localized area. The remaining cases were more or less generalized with, however, a predilection for the extremities, scalp and vicinity of the nail matrix. The face is rarely involved. Gonorrheal conjunctivitis has been reported, but apparently the mucous membranes do not share in the parakeratotic process.

RELATIONSHIP TO PSORIASIS

Adamson's [57] article entitled "Keratodermia Blenorrhagica. Is It a Form of Psoriasis?" has resulted in a great deal of discussion concerning the relationship of these two dyskeratoses (Stillians and Zeisler [55]). The clinical resemblance to psoriasis has been noted also by Graham Little,[58] Waelsch,[59] and others, and recently Falk [60] in an article on psoriasis arthropathica would include all cases of "hyperkeratotic exanthems" in gonorrheal joint infections.

One must agree that there is a decided resemblance clinically and histologically between keratoderma blennorrhagicum and some cases of arthropathic psoriasis. In view of the histologic findings in the present case, we feel that keratoderma blennorrhagicum is a distinct and separate entity which unlike arthropathic psoriasis originates as a vesicle and soon becomes pustular; the pustule is later represented by the characteristic cornified crust.

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57. Adamson: Keratodermia Blennorrhagica: Is It a Form of Psoriasis? Brit. J. Dermat. & Syph. **32**:183, 1920.

58. Little, Graham: Keratodermia Blennorrhagica, Practitioner **97**:531, 1916.

59. Waelsch: Ueber die Beziehungen zwischen Psoriasis und Gelenkserkrankungen, Arch. f. Dermat. u. Syph. **104**:195 and 453, 1910.

60. Falk: Psoriasis arthropathica (einschliesslich der sog. "hyperleratotischen Exantheme" bei gonorrhoischen gelenkerkrankungen), Arch. f. Dermat. u. Syph. **129**:299, 1921.

CONCLUSIONS

1. Keratoderma blennorrhagicum is histologically a disease starting with vesiculation, increasing to rapid pustulation, rupial crusting, healing and slight atrophy.

2. In the study of many microscopic sections as well as observation of the patient over a period of ten months, the process strongly resembles a constantly recurring contagious impetigo.

3. Bacteriologic study failed to show a diplococcus in any way resembling the gonococcus. Cultures made from all stages invariably yielded a staphylococcus.

4. The small number of cases, the unique type of the lesions invariably associated with chronic gonorrhea and gonorrheal arthritis point, however, to an undeniable relation of the entity to chronic gonorrheal infection.

5. There is no histogenetic basis for believing that keratoderma blennorrhagica and psoriasis are in any way related.

ADDENDA

Since the foregoing report was submitted the patient has received six weekly intravenous injections of sulpharsphenamin, with little immediate change in the cutaneous manifestations or the associated arthritis. However, under vigorous treatment of the gonorrhea and painstaking care, the patient's general condition has shown a marked improvement, and the eruption has gradually disappeared. A prostatotomy and seminal vesiculectomy were performed, from which the patient made an uneventful recovery. The tissue removed was examined by Dr. A. S. Warthin who reported: "Glandular hyperplasia of prostate with some cystic glands. Active chronic inflammation with much fibrosis. Chronic purulent prostatitis. Organizing thrombi. Seminal vesicles show a chronic purulent inflammation with marked thickening and fibrosis of wall; process is more active in the wall and perivesicular tissue than in the submucosa." Since this operation was performed he has gained in weight, no new lesions have appeared, and a striking functional improvement in the small joints has followed systematic baking, massage and careful manipulation.

PERI-ARTICULAR FIBROMA OF THE SKIN

("SYNOVIAL" LESION OF THE SKIN)

LOUIS SAVATARD

MANCHESTER, ENGLAND

American writers have described these peculiar tumors under the name synovial lesions of the skin. Hyde [1] was apparently the first to direct attention to them. Later Lingenfelter,[2] Ormsby [3] and Sutton,[4] reported cases, and recently MacKee and Andrews [5] and Montgomery and Culver [6] have recorded cases and discussed their pathology. The situation of the fibromas, their gelatinous contents and the apparent extension of their capsule to the articulation, suggested that they were intimately related to the synovial membrane of the interphalangeal articulations. Hence, on clinical grounds they were considered to be of synovial origin. MacKee and Andrews confirm this finding by roentgenographic and histologic examinations. Montgomery and Culver, on the other hand, apparently on clinical inspection alone, emphatically deny their synovial connection, and state that they are merely cystic warts.

Shortly after MacKee and Andrews' last paper, three cases came under my observation and so provided material for investigation. Two were in my own clinic, and one was a private case of Dr. G. H. Lancashire.

CASE 1.—The first case was that of a married woman, aged 42, who had been receiving treatment for some other affection. She presented a small tumor on the dorsal aspect of the terminal phalanx of the left thumb (Fig. 1), which at the first glance merely suggested the appearance of a wart, but on closer inspection there seemed to be some slight transparency, and on palpation fluctuation could be appreciated. The tumor was of six years' duration and had never produced any subjective symptoms.

Roentgenographic examinations showed no connection with the adjacent joint, which was normal. I excised the growth, and on examination found it to be a soft fibroma. Serial sections failed to show any cystic degeneration (Fig. 4).

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1. Hyde: Diseases of the Skin, Ed. 1, 1883.
2. Lingenfelter: J. Cutan. Dis. **31**:647, 1913.
3. Ormsby: J. Cutan. Dis. **31**:943, 1913.
4. Sutton, R. L.: Synovial Lesions, J. A. M. A. **66**:185 (Jan. 15) 1916.
5. MacKee, G. M., and Andrews, G. C.: Synovial Lesions of the Skin, Arch. Dermat. & Syph. **4**:162 (Aug.) 1921. The Pathology of Synovial Lesions of the Skin, ibid. **5**:561 (May) 1922.
6. Montgomery, D. W., and Culver, G. D.: The Pathologic Anatomy of Synovial Lesions of the Skin, Arch. Dermat. & Syph. **5**:329 (March) 1922.

Fig. 1 (Case 1).—Tumor on terminal phalanx of left thumb

Fig. 2 (Case 2).—Tumor over the dorsal aspect of distal interphalangeal articulation of little finger.

Fig. 3 (Case 3).—Tumor below base of nail of thumb.

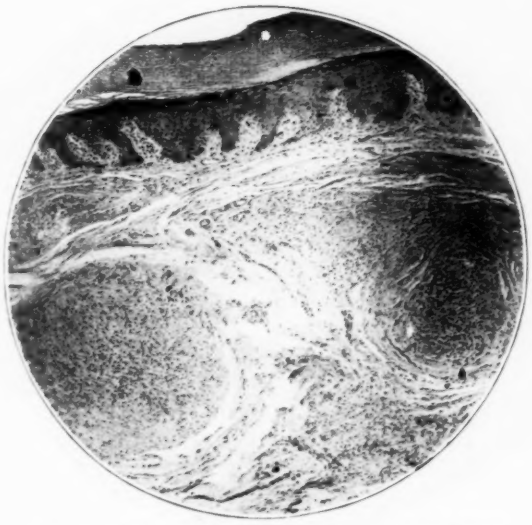

Fig. 4 (Case 1).—Photomicrograph of tumor.

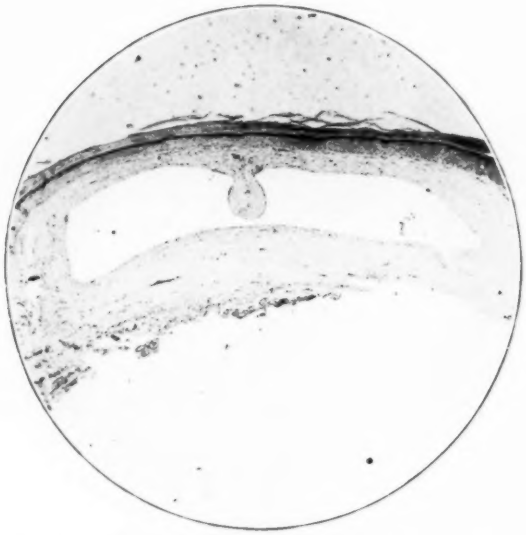

Fig. 5 (Case 2).—Photomicrograph of tumor.

Fig. 6 (Case 2).—Roentgenogram of affected finger.

Case 2.—The second case was also in a woman, aged 46. The tumor was situated over the dorsal aspect of the distal interphalangeal articulation of the little finger of the right hand. It had been noticed eight years previously and had slowly increased in size, but had produced no discomfort. Clinically it was indistinguishable from the former case, except that it was slightly larger (Fig. 2). Roentgenographic inspection revealed no connection with the joint cavity, although there appeared to be a slight spur at the base of the phalanx (Fig. 6). I excised the tumor and found on investigation that it was a fibroma which had undergone cystic degeneration. The cyst, under thorough high power examination, failed to reveal any endothelial or epithelial lining, and the growth appeared to have no connection with the underlying structures. The papillae were flattened out, and the coil glands seen at its base (Fig. 5).

Case 3.—Dr. Lancashire's case occurred in a man aged 26, who presented a similar lesion just below the base of the nail of the right thumb (Fig. 3). It had existed for a few months and had previously resolved under treatment by puncture and the application of pure phenol, only to recur a few weeks later. A single application of radium had produced a complete cure. Roentgenographic examination showed no connection with the articulation.

Pusey's [5] histologic findings were almost similar to those in my second case. He denies the presence of endothelial cells and the connection of the tumor with any deeper structure.

MacKee and Andrews' sections reveal the presence of probable endothelial cells, and the situation of the cyst suggests connection with the deeper structures. Their roentgenograms also confirm the articular association.

Montgomery and Culver's "schematic representation" is to my mind inconclusive, and I believe that had they made a section of the tumor they would have found a different picture.

My own investigations lead me to the conclusion that we have here tumors clinically indistinguishable but varying in origin. I cannot agree therefore that the old name of "synovial lesions of the skin" should be retained, for I am convinced that most of these tumors are not of synovial origin. Roentgenotherapy seems to be the ideal treatment.

THE EXPERIMENTAL PRODUCTION OF AN ARSENIC RESISTANT STRAIN OF SPIROCHAETA PALLIDA IN RABBITS *

JOSEPH V. KLAUDER, M.D.
PHILADELPHIA

In the chemotherapy of trypanosomiasis of man and animals, it is possible to produce arsenic-fast strains of various trypanosomes after these organisms have been subjected a few times to the action of certain arsenic compounds short of the sterilizing dose. Experiments of this nature have been conducted with atoxyl, arsacetin and other arsenic compounds. If the organisms are not all destroyed after the initial injection, the offspring of the remaining ones are more resistant to the action of the drug than the preceding generation. A larger dose of the arsenical compound is required to destroy the organism and to overcome this increased resistance. This increased resistance may be developed to such an extent that the amount of the arsenic compound required to exert a parasitotropic action is in excess of its organotropic action. Indeed, the production of drug-fast strains of various trypanosomes is an admitted failure of chemotherapy of trypanosomiasis in man and animals.

According to Kolmer,[1] an arsenic-fast strain of *Trypanosoma equiperdum* can be produced with relative ease by treatment with the arsphenamiins.

The production of a drug-fast strain of organism is not confined to the trypanosomes. It has been shown that arsenic fast strains can be produced with certain spirochetes, for example, *Spirochaeta recurrentis* and *S. duttoni*. Arsenic-fast strains of these organisms have been produced in mice and rats by treatment with atoxyl or arsacetin. Indeed, Marks,[2] succeeded in greatly raising the resistance of a bacteria to arsenious acid by submitting cultures of it to gradient dilutions of the drug.

In the relapsing fevers in man and perhaps in *Spirochaeta pertenuis* infection—yaws,[3] Ehrlich's—therapie sterilisans magna is possible of

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* From the Research Institute of Cutaneous Medicine, Philadelphia.

* Read as part of the paper "Studies in Experimental Syphilis" at the Forty-Sixth Annual Meeting of the American Dermatological Association, Ann Arbor, Mich., June 7-9, 1923.

1. Kolmer, John A.: Personal communication.

2. Marks, L. H.: Ueber einen arsenfesten Bakterienstamm, Ztschr. f. Immunitätsforsch. u. exper. Therap. **6**:293-298, 1910.

3. Schamberg, J. F., and Klauder, J. V.: Study of a Case of Yaws (Frambesia Tropica) Contracted by an American Soldier in France, Arch. Dermat. & Syph. **3**:49 (Jan.) 1921.

accomplishment. In human syphilis, however, it is not possible to render spirochete free an infected person with a single, or indeed a few injections of one of the arsphenamins. The question of an arsenic-fast strain of *Spirochaeta pallida* is therefore of considerable importance in the practical employment of the arsenicals in the therapy of human syphilis.

Clinical observations lend support to the existence of drug-fast strains of *Spirochaeta pallida*. Occasionally, patients are seen with active syphilitic lesions involving the mucous membrane and skin which are refractory to arsphenamin therapy. In these circumstances, the administration of mercury causes involution of the syphilitic process. Conversely, syphilitic lesions resistant to mercury disappear after treatment with arsphenamin.

Instances of Wassermann-fast syphilitic patients may be given as possible evidence of a drug-fast strain, or drug resistant strain of *Spirochaeta pallida*, and perhaps, also, the fact that more arsenical treatment is generally required to render negative a recurrent positive Wassermann reaction than is usually required in the acute untreated secondary stage of syphilis.

In accordance with the possibility of producing an arsenic-fast strain of *Spirochaeta pallida*, attention has been directed to the possible harmfulness of treating syphilitic patients in the acute stage of the disease with small and gradually increasing doses of the arsphenamins.

In view of the aforementioned experimental and clinical data, it seems not at all improbable that *Spirochaeta pallida* may become more resistant to the action of arsenical compounds.

Akatsu and Noguchi[4] carried out experiments in which they apparently succeeded in raising to many times their original degree the resistance of *Spirochaeta pallida* (two strains), *Spirochaeta refringens* and *Spirochaeta microdentium* to arsphenamin, neo-arsphenamin and mercuric chlorid. The experiments involved the cultivation of these organisms in mediums containing the aforementioned drugs in a concentration just short of that required to suppress the growth completely, and to make subcultures from it into new mediums containing somewhat greater quantities of the chemicals than the preceding series.

As a result of these experiments it was shown that the resistance of *Spirochaeta pallida* and *Spirochaeta microdentium* within three or four months increased their tolerance to arsphenamin and neo-arsphenamin to five and one-half times their original mark. With *Spirochaeta refringens* the increase was about three times.

4. Akatsu, S., and Noguchi, H.: The Drug-Fastness of Spirochetes to Arsenic, Mercurial and Iodide Compounds in Vitro, J. Exper. Med. **25**:349-362 1917.

Against the action of mercuric chlorid the amount of increased tolerance of *Spirochaeta pallida* was about thirty-five to seventy times the original, while that of *Spirochaeta microdentium* was about ten times as much as was reached within ten weeks. *Spirochaeta refringens* resisted thirty times the original dose.

The acquired drug-fastness in vitro gradually disappeared when the spirochetes were cultivated again in the drug-free mediums for several generations.

Nichols [5] conducted the following experiments in order to determine arsenic-fast properties of *Spirochaeta pallida*. Rabbits were successfully inoculated with *Spirochaeta pallida* from a recurrent mucous patch in a patient previously treated with one injection of arsphenamin. One rabbit was treated with 0.005 gm. per kilogram of arsphenamin, which Nichols states was one half of the sterilizing dose. The dark-field examination forty-eight hours later showed many motile spirochetes. The dose was then repeated; spirochetes and the testicular lesion disappeared, but recurred sixteen days later. The strain was then transferred to three other rabbits, and in these was promptly killed by doses of 0.005 and 0.01 gm. per kilogram. Nichols states:

> Hence, after four exposures, no arsenic-fast properties could be demonstrated. It is possible that by repeating smaller doses some resistance might be developed, but the aim of the experiments was to approximate clinical conditions as closely as possible. It seems feasible, therefore, to repeat the drug several times with good effect and without danger of producing resistant strains. One animal only has shown a relapse after a dose of 0.010 gm. per kilogram and this animal had previously received 0.025 gm. of sodium cacodylate. A second relapse occurred after 0.010 gm. per kilogram but the infection was finally entirely abolished by 0.020 gm. per kilogram. This case might be cited as an example of resistance to arsenic, but as it was only one out of a number, the relapse may equally well be explained by assuming that a few spirochetes were hidden in the tissues away from the action of the drug.

In view of Akatsu and Noguchi's observations and in view of the results of the study herein recorded, one is perhaps justified in concluding that the relapse following treatment with 0.01 gm. per kilogram of arsphenamin in Nichol's study was evidence of arsenic resistance of *Spirochaeta pallida*.

GENERAL PLAN OF THE EXPERIMENTS

To my knowledge there are no recorded experiments conducted in vivo which involved attempts to produce an arsenic-fast strain of *Spirochaeta pallida*. With this end in view, experiments were conducted with syphilitic rabbits infected with the Nichols' strain of *Spirochaeta*

5. Nichols, H. J.: Further Observations on Certain Features of Experimental Syphilis and Yaws in the Rabbit, J. Exper. Med. **14**:202, 1911.

pallida which was isolated by Nichols [6] from spinal fluid in 1912 and maintained in rabbits ever since.

The general plan of the experiments was to allow *Spirochaetae pallidae* to accustom themselves gradually to the action of arsenic by injecting rabbits, with active syphilitic lesions, with a very small dose of arsphenamin, after a variable period to transplant the organism from animals thus treated to other animals, treating the latter animals with a slightly larger dose of the drug, and a repetition of this procedure until the amount of the drug was reached which constitutes the therapeutic active dose and that amount of arsphenamin constituting the curative dose in animals not so treated.

THE THERAPEUTIC ACTIVE DOSE OF ARSPHENAMIN IN EXPERIMENTAL SYPHILIS

The therapeutic active dose of arsphenamin injected intravenously into syphilitic rabbits [7] is 0.006 gm. per kilogram of body weight. The results following the administration of this dose in rabbits with active syphilitic testicular lesions are as follows: Before treatment the dark-field examination of the surface of the chancre or in its absence of serum obtained from puncturing testicular nodes shows many motile spirochetes in each microscopic field. Twenty-four hours after treatment, the dark-field examination shows only a few slightly motile or nonmotile spirochetes and many agglutinated organisms in each field. Dark-field examinations on subsequent days are negative. Grossly the chancre or testicular nodes are appreciably smaller the following twenty-four hours and gradually decrease in size until complete involution occurs in about eight days (Fig. 1). There is no recurrence of testicular or scrotal syphilitic lesions during the following two months. A small percentage of animals, however, develop recurrent syphilitic lesions after about two or three months.

The administration of the therapeutic active dose in syphilitic rabbits does not render the animal spirochete free, since the organism can be demonstrated in lymph nodes of the animals showing no recurrent lesions by inoculating other rabbits with an emulsion of the nodes.

THE CURATIVE DOSE OF ARSPHENAMIN IN EXPERIMENTAL SYPHILIS

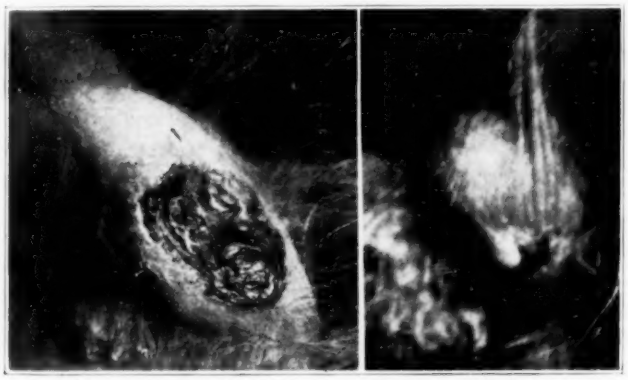
The curative dose of arsphenamin in syphilitic rabbits—which accomplishes a therapie sterilisans magna and which subsequent to

6. Nichols, H. J.: Observations on a Strain of Spirocheta Pallida Isolated from the Nervous System, J. Exper. Med. **19**:362-371, 1914.

7. Klauder, J. V.: The Comparative Spirocheticidal Activity of the Salts of Certain Metals not Heretofore Studied in the Treatment of Experimental Rabbit Syphilis, Arch. Dermat. & Syph. **9**:219 (Feb.) 1924.

its administration causes negative results to be obtained with lymph node inoculation into other rabbits—is about 0.012 gm. of the drug per kilogram of body weight.

Nichols [8] recently reported negative results from lymph node inoculation, which nodes were removed from a syphilitic rabbit subsequent to treatment with 0.01 gm. per kilogram of neo-arsphenamin and another animal treated with 0.015 gm. per kilogram of the same drug. In a similar study conducted by Kolmer,[9] negative results were obtained with the nodes from a syphilitic rabbit treated with 0.012 gm. per kilogram of neo-arsphenamin and another animal treated with 0.015 gm. per kilogram of neo-arsphenamin.



A B

Fig. 1.—Results in control experiment. *A* shows enlarged, indurated syphilitic testis with scrotal chancre; dark-field examination positive, before intravenous injection of 0.006 gm. per kilogram of arsphenamin (therapeutic active dose). *B* shows complete involution two days later. No recurrence (four months' observation). A certain percentage, however, of animals thus treated developed recurrent lesions after about two months following treatment. Compare with Figures 3, 4, 5 and 6.

According to Pierce and Brown,[10] lymph nodes from untreated syphilitic rabbits when inoculated into other animals yield 100 per cent. positive results.

CONTROL EXPERIMENT

This consisted in determining the therapeutic active dose of arsphenamin in rabbits infected with the strain of *Spirochaeta pallida* employed in this study. This amount of the drug was 0.006 gm. per kilogram

8. Nichols, H. J., and Walker, J. E.: Experimental Observations in the Prophylaxis and Treatment of Syphilis, J. Exper. Med. **38**:536, 1923.

9. Kolmer, J. A.: Personal communication.

10. Pierce, L., and Brown, W. H.: A Study of the Relation of Treponema Pallidum to Lymphoid Tissues in Experimental Syphilis, J. Exper. Med. **35**: 39-62, 1922.

of body weight. The result of this observation is shown in Figure 1. The same lot number of the arsphenamin employed to determine this was used in the following experiments, which attempted to produce an arsenic-fast or arsenic-resistant strain of *Spirochaeta pallida*.

ANIMAL EXPERIMENTATION

Rabbits with well developed scrotal chancres and testicular nodes, the serum from which contained many motile spirochetes, were injected intravenously with an initial dose of 0.0002 gm.[11] per kilogram of arsphenamin. Twenty-four to forty-eight hours later, the infection

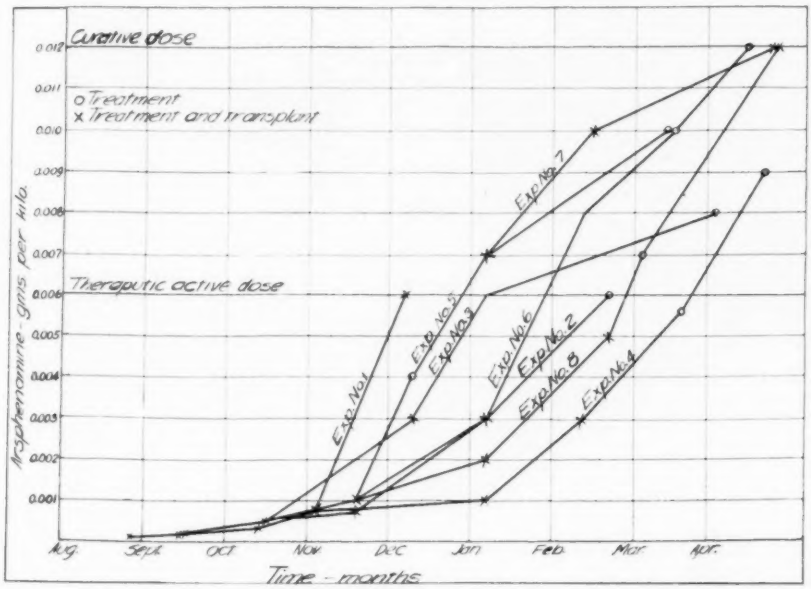


Fig. 2.—Graphic representation of the table.

was transplanted into another series of rabbits. After the latter animals showed active syphilitic testicular lesions, 0.0002 gm. was again administered and the infection again transplanted. The animals into whom the infection was transplanted received 0.0005 gm. The doses of arsphenamin subsequent to 0.0005 gm. were variable as is shown in the following experiments which are tabulated in Table 1 and graphically represented in Figure 2.

In Experiment 1, the details of which are given in the table, it will be noted that the initial dose of arsphenamin was 0.0002 gm., which was twice repeated, followed by the administration of 0.0003 gm., then

11. All subsequently stated amounts of arsphenamin employed in treatment are per kilogram of body weight.

0.0008 gm. Subsequent to the latter dose, 0.006 gm. (the therapeutic active dose) was administered. The result of this treatment was negative, that is, the chancre involuted in the usual time, about eight days. The object of this experiment was to determine with what ease *Spirochacta pallida* would develop resistance to arsenic.

In Experiment 2, after treatment with a few small doses of arsphenamin in a similar manner as in Experiment 1, 0.003 gm. of arsphenamin was administered and then 0.006 gm. The result of this experiment was not frankly negative, as in Experiment 1, but suggestive of some degree of arsenic resistance of *Spirochacta pallida*, as the chancre remained unchanged for thirteen days and involuted in one month.

Fig. 3.—Recurrent syphiloma which developed twenty-four days after treatment with 0.006 gm. per kilogram of arsphenamin. Dark-field examination at time of recurrence showed many motile spirochetes (Rabbit 13F, Experiment 3).

In Experiment 3, conducted in a manner similar to Experiment 2, the result was still more suggestive. After the administration of 0.006 gm. of arsphenamin, testicular nodes involuted in twenty-one days but recurred four days later, at which time motile spirochetes were present. A scrotal chancre subsequently developed (Fig. 3). However, after treatment with 0.008 gm. of arsphenamin involution occurred in ten days; there was no recurrence twenty days later, at which time the animal died.

In the remaining experiments (Nos. 4, 5, 6, 7 and 8), all animals were treated with similar and smaller amounts of arsphenamin up to and including 0.001 gm. of the drug. Following the latter treatment, variable amounts were injected. The results were essentially the same in all experiments, that is, following the administration of approximately the therapeutic active dose (0.006 gm.), the scrotal chancre or testicular nodes were unchanged (Experiment 8, Fig. 6*A*) or little changed (Experiment 4, Fig. 4), or the syphilitic process involuted in a period

of time much longer than the usual eight days and recurred in a relatively short time (Experiments 5, 6 and 7, Fig. 5). Treatment with arsphenamin continued with ascending doses of the drug until that amount was reached which caused a prompt involution of the syphilitic process and no recurrence. This amount varied in the different experiments from 0.008 gm. to 0.012 gm.

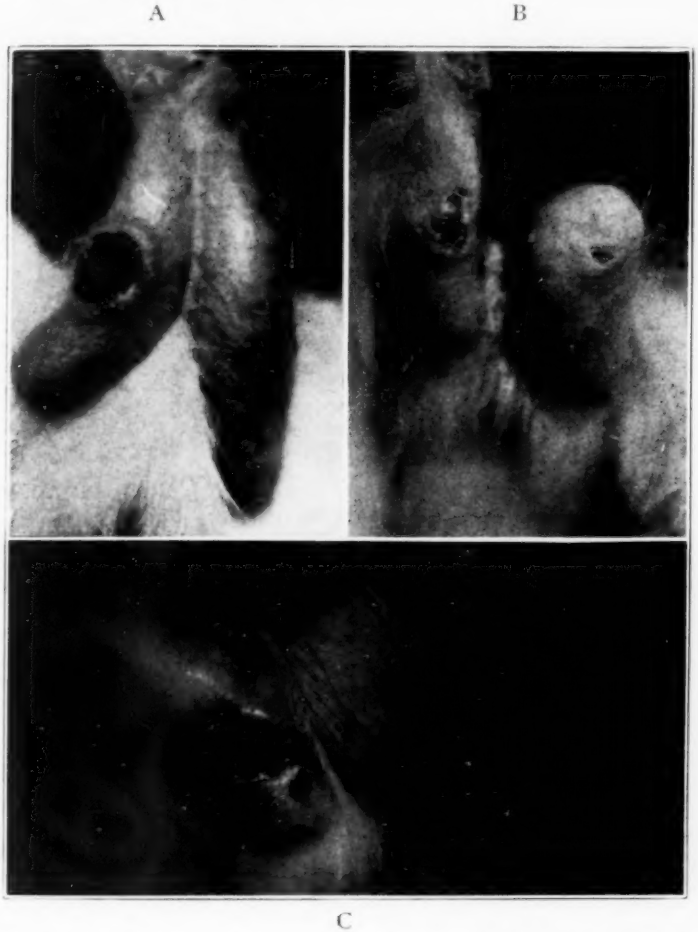


Fig. 4.—*A* shows scrotal chancre before treatment with 0.0055 gm. per kilogram of arsphenamin; *B*, twelve days later showing new chancre appearing on other testis; *C*, twenty-four days later, showing increase in size of both chancres (Rabbit 21F, Experiment 5).

The most striking result obtained was in Experiment 8. In this experiment the same animal was treated with 0.005, 0.007 and 0.01 gm. of arsphenamin, eleven and twelve days intervening between treatments. The enlarged and indurated testicles remained unchanged following treatment with 0.005 and with 0.007 gm. (Fig. 6*A*). A

scrotal chancre appeared nine days after treatment with the latter dose. This chancre involuted ten days following treatment with 0.005 gm., but the testicles remained indurated. Fourteen days later a recurrent chancre appeared (Fig. 6 *B*). Finally, 0.012 gm. was administered, which resulted in complete involution of the syphilitic process in eight days. There was no recurrence two months later, at which time the animal died.

In order to determine whether the strain of *Spirochaeta pallida* studied which showed some evidence of increased resistance to arsenic would be resistant to another spirocheticidal drug, the following experiment was undertaken:

Spirochetes from Rabbit 10 F (Experiment 8), the testicular lesions of which recurred following treatment with 0.007 gm. of arsphenamin,

Fig. 5.—Scrotal chancres which appeared one month after intravenous injection of 0.007 gm. per kilogram of arsphenamin (Rabbit 10F, Experiment 7).

were transplanted into another series of animals. Some of the latter animals were treated with the therapeutic active dose of sodium and potassium tartobismuthate and some with potassium tartrobismuthate.[12] The result of this experiment was negative; that is, the therapeutic active dose of these drugs acted in a manner similar to the same dose administered to the control animals.

DISCUSSION OF EXPERIMENTS

Experiments numbering 1 to 8, shown in Table 1 and graphically represented in Figure 2, were typical and in some instances the most striking examples of the results obtained in the entire study. They do not represent all the experiments conducted. Tabulation of the experiments not included in the table would duplicate those shown.

12. Klauder, J. V.: Bismuth in the Treatment of Syphilis. Report of Clinical and Experimental Studies, Arch. Dermat. & Syph. **7**:721-744 (June) 1923.

Dark-field examinations of the syphilitic testicular lesions in the animals treated in this study were made at frequent intervals. After the administration of arsphenamin in amounts up to 0.001 gm. per kilogram of body weight, no effect was noted in the dark-field examination. As this amount increased, however, particularly following treatment above 0.005 gm., spirochetes would temporarily disappear in the dark-field examination, or nonmotile organisms would be present. In no instance following treatment with the high amounts of arsphenamin did a positive dark-field examination remain positive. The criteria in this study as to the arsenic resistance of *Spirochaeta pallida* were the effect of treatment on the syphilitic lesion, its rate of disappearance, the period elapsing between treatment and the appearance of recurrent lesions, and the reappearance of motile spirochetes.

A B

Fig. 6.—*A* shows enlarged, indurated testis of syphilitic rabbit which remained unchanged after treatment with 0.007 gm. per kilogram of arsphenamin. The scrotal chancre appeared nine days after this treatment. *B*, same animal as in *A* showing recurrent chancre appearing twenty-four days after treatment with 0.0095 gm. per kilogram of arsphenamin (Rabbit 25F, Experiment 8).

As aforementioned, the highest amount of arsphenamin reached in the study which caused prompt involution of the syphilitic process and no recurrence of the latter ranged from 0.008 gm. per kilogram to 0.012 gm. The resistance of *Spirochaeta pallida* to arsenic was apparently increased from 0.006 gm. per kilogram (the therapeutic active dose in the control animals) to a maximum of 0.01 gm. per kilogram. Resistance of *Spirochaeta pallida* to arsenic was increased so far as the therapeutic active dose was concerned but not the curative dose.

It should be borne in mind in the interpretation of these results that the course of syphilis in rabbits is variable. Of prime importance in such interpretation is the knowledge as to the amount of arsphenamin constituting the therapeutic active dose in experimental syphilis, the

TABLE 1.—*Results of Arsphenamin in the Direction of Producing an Arsenic Resistant Strain of Spirochaeta Pallida in Rabbits, Showing Number of Ascending Doses of Arsphenamin and Number of Transplants, as a Result of which the Therapeutic Active Dose 0.006 gm. Per Kilogram of Arsphenamin in the Control Animals Was Raised to a Maximum of 0.01 gm. in the Animals Studied*

		Experiment No.								
		1	2	3	4	5	6	7	8	
							* April 12	* March 20	* April 20	
Curative Dose	0.012						R. 28F ¶¶	R. 36F ¶¶	R. 25F ¶¶	
	0.011					* March 1†		** Feb. 16	* March 16	
	0.010				* April 18	R. 15F ¶¶		R. 34F	R. 25F ##	
	0.009				R. 21F ¶¶		* Feb. 11			
	0.008			*March 30			R. 28F ††			
	0.007			R. 13F ¶¶		* Jan. 6		** Jan. 6	* March 4	
		* Dec. 7	* Feb. 21	* Jan. 6		R. 15F ¶		R. 10F ‡‡	R. 25F §§	
Therapeutic Active Dose	0.006	R. 24A †	R. 6F ‡	R. 13F §	* March 17 R. 21F #					
	0.005								* Feb. 21 R. 25F	
	0.004					** Dec. 8		** Dec. 8		
	0.003		* Jan. 1 R. 6F	** Dec. 8 R. 6A	* Feb. 11 R. 21F	R. 7A	** Jan. 6 R. 9F	R. 7A	** Jan. 6	
	0.002								R. 7F	
	0.001	** Nov. 3 R. 96	** Nov. 19 R. 5A		** Jan. 6 R. 4F * Nov. 10 R. 5A	* Nov. 19 R. 7A	** Nov. 19 R. 7A	* Nov. 19 R. 7A	** Nov. 19 R. 7A	
Arsphenamin Gm. per Kilogram	0.0005		** Oct. 14 R. 82	** Oct. 14 R. 82	** Oct. 14 R. 82	** Oct. 14 R. 82	** Oct. 14 R. 82	** Oct. 14 R. 82	** Oct. 14 R. 82	
	0.0004	** Oct. 11								
	0.0003	R. 81 ** Sept. 16	** Sept. 16	** Sept. 16	** Sept. 16	** Sept. 16	** Sept. 16	** Sept. 16	** Sept. 16	
	0.0002	R. 78, R. 81	R. 78	R. 78	R. 78	R. 78	R. 78	R. 78	R. 78	
	0.0001	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	** Aug. 26 R. 56	

* indicates treatment; **, treatment and transplant; †, chancre involuted in eight days (normal time); ‡, chancre unchanged for thirteen days, involuted in one month; §, testicular nodes involuted in twenty-one days, recurred four days later; motile spirochetes; scrotal chancre appeared later (Fig. 3); ¶, chancre little changed after this treatment (Fig. 4); ††, chancre involuted in thirteen days, but recurred eleven days later; motile spirochetes in dark field three days after this treatment; ‡‡, testicular nodes involuted in thirteen days but recurred eleven days later; scrotal chancre appeared still later; dark field three days after this treatment; §§, chancre appeared one day later (Fig. 2); ##, chancre little changed but still present

incidence and the time of recurrence of active syphilitic lesions following the administration of this amount of arsphenamin.

As aforementioned, the results of treatment with 0.006 gm. per kilogram of arsphenamin, the therapeutic active dose, is fairly constant.

In our observation on the effect of treatment with arsphenamin in experimental syphilis, employing 0.006 gm. or more per kilogram, we have never observed syphilitic lesions remaining unchanged or little changed, or requiring such a long period of involution and such early recurrences as was noted in the study herein reported. These observations stand out in striking contrast with the usual results of treatment with the therapeutic active dose or larger amounts of arsphenamin.

It is important to note in Experiment 8, the most positive of all the experiments, gradient treatment with arsphenamin was more slowly and more uniformly carried out than in any of the remaining experiments. It is therefore conceivable that greater resistance to arsenic might have developed in this as well as in the other experiments if treatment had been still more gradual.

Following the administration of that amount of arsphenamin which produced prompt involution of the syphilitic process, the animal so treated was observed for recurrent lesions, as long as six months; a few, however, were observed for about one month, at which time the animals died.

Space will not permit a correlation of the observations herein reported to the therapy of human syphilis. Such correlation will be the basis of a separate report.

CONCLUSIONS

From the results of the experiments herein recorded, it appears that the resistance to arsenic of the strain of *Spirochaeta pallida* studied was increased to a maximum of 68 per cent., since the therapeutitc active dose 0.006 gm. of arsphenamin in the control animals was raised to a maximum of 0.01 gm. in the animals studied. To obtain this result it required a total of nine treatments with ascending doses of arsphenamin and a total of six transfers of the infection from one animal to another.

The increased resistance to arsenic applied only to the action of the therapeutic active dose. The curative dose of arsphenamin in rabbit syphilis, about 0.012 gm. per kilogram, remained as such in the animals studied. The increased resistance was striking within these limits, beyond which no further increase developed.

SUMMARY

Arsenic-fast strains and strains with increased resistance to arsenic have been produced experimentally with trypanosomes, certain spirochetes and certain bacteria.

Clinical evidence supporting the belief that *Spirochaeta pallida* may develop increased resistance to arsenic is presented.

A recorded experiment conducted in vitro in which the resistance of *Spirochaeta pallida* to arsenic and to mercury was increased to many times their original degree, is quoted.

Results of experiments are reported which involved attempts to increase the resistance of *Spirochaeta pallida* to arsenic. The general plan of the experiments was to allow *Spirochaeta pallida* to accustom themselves gradually to the action of arsenic by injecting rabbits, with active syphilitic lesions, with a very small dose of arsphenamin, after a variable period to transplant the organisms to other animals, treating the animals with a slightly larger dose of the drug. This procedure was repeated until the amount of the drug was reached which constitutes the therapeutic active dose and that amount constituting the curative dose in animals not so treated (control animals).

The therapeutic active dose of arsphenamin in syphilitic rabbits is 0.006 gm. of arsphenamin per kilogram. As a result of this treatment syphilitic lesions involute in about eight days. The curative dose is about 0.012 gm. per kilogram.

The result of the aforementioned experiments results in decreasing the efficiency of the therapeutic active dose 0.006 gm. per kilogram of arsphenamin so that 0.01 gm. per kilogram became the therapeutic active dose. The increased resistance to arsenic was striking within these limits, beyond which no further increase developed.

The increased resistance to arsenic applied therefore only to the action of the therapeutic active dose. The curative dose in experimenetal syphilis remained as such in the animals studied.

Experiments were conducted which apparently showed that the strain of *Spirochaeta pallida* showing increased resistance to arsenic was not resistant to the spirocheticidal action of bismuth.

The foregoing results are shown in table form, and are graphically and pictorially represented.

THE WASSERMANN TEST

XI. THE EFFECT OF MERCUROSAL ON THE WASSERMANN REACTION *

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AND

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During an investigation of the Wassermann test as a criterion of cure for syphilis, it became necessary to compile data as to the effect of various antisyphilitic remedies on the Wassermann reaction. Among the drugs thus used was mercurosal,† a synthetic compound of mercury, di-sodium-hydroxymercuri-salicyl-acetate, $C_6H_3 \begin{cases} COONa \\ OCH_2COONa \\ HgOH \end{cases}$. This paper presents our studies on the influence of mercurosal in the treatment of serum positive syphilis.

A good antisyphilitic drug must fulfil four requirements: (1) ease and convenience of administration; (2) no toxic effect on the patient; (3) the production of clinical improvement, and (4) the reduction of a positive Wassermann reaction. It is our purpose to record our findings with mercurosal in respect to these four qualifications, with special consideration of the last. By so doing we do not place ourselves on record as advocating any special compound since, in our opinion, the clinical and serologic results here recorded represent only the action of a mild, soluble preparation of mercury.

METHODS OF WORK

Since mercury is held to be of less importance in early than in tertiary and latent syphilis in which a persistent positive Wassermann test may be the only manifestation, it seemed best to determine the effect of mercurosal on the latter class of patients, since Cole, Driver, and Hutton [1] had carefully studied its action in acute syphilis. Their conclusions were less favorable as to its efficiency than those of six other investigators who had used the drug in connection with arsphenamin, and thus were unable to determine its individual action. Owing to the labor involved in the serologic work, it was necessary to limit our field

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* From the Evans Memorial and Boston University School of Medicine.

† Furnished through the courtesy of Parke, Davis & Company.

1. Cole, H. N.; Driver, J. R., and Hutton, J. G.: Mercurosal in Syphilis, J. A. M. A. **79**:1821 (Nov. 25) 1922.

further to the intensive study of eleven selected old cases with strongly positive reactions, but with a wide individual variation in actual strength of reaction.

Wassermann Tests.—Tests were made at definite intervals before, during and after treatment. After separation of the serum, dilutions from ½ to 1/64 were made with physiologic saline. The dilutions after inactivation in the water-bath, thirty minutes at 56 C., were numbered and sent to two large laboratories, the average result being recorded. In serum approaching the negative reaction, two and four times the amount were used. Thus on the original Wassermann basis of 0.2 c.c. of serum to a 5 c.c. volume, our tests ranged from 0.8 to 0.0037 c.c.

In order to obtain a numerical valuation, the arbitrary standard of four units was given for complete inhibition in 0.2 c.c. of serum. Thus each titrated serum would receive a value corresponding to the point at which inhibition ceased and hemolysis began. In Table 1 a graphic representation of a thirty-two unit serum is shown. The variations in the test and the possibility of containing more than thirty-two and less

TABLE 1.—*Serum Valuation*

Serum in c.c.	0.8	0.4	0.2	0.1	0.05	0.025	0.0125	0.0063	0.0037
Numerical value	1	2	4	8	16	32	64	128	256
Laboratory A	4	4	4	4	4	4	2	1	0
Laboratory B	P	P	P	P	P	P	D	N	N

than sixty-four units makes possible a range in the 0.0125 c.c. dilution from negative to 3+, and in the 0.0063 c.c., from negative to 2+. With this arbitrary numerical standard, the strength of the positive reaction in any serum may be stated.

Through the courtesy of Dr. W. H. Hinton one set was tested in the laboratory of the Massachusetts Department of Public Health. The other set was tested in our own laboratory with the same standard technic except for the minor differences described by Belding and Adams.[2] By averaging the results of the two laboratories, it was possible in part to eliminate the variations due to technic. Our observations on the titrated serums of syphilitic persons indicate that the fluctuations in the antibody content over short periods of time are practically negligible in untreated old cases, and that nearly all reported changes are the results of variation in the performance of the test. In this respect our findings agree with those of Haller[3] and are at

2. Belding, D. L., and Adams, C. B.: Boston M. & S. J. **187**:815, 1922.

3. Haller, D. A.: Wassermann variations, J. A. M. A. **66**:882 (March 18) 1916.

variance with those of Craig,[4] who maintains that great variations occur from day to day. Evidence on this point is substantiated by uniform variation in the reaction of several known serums on a particular day, discrepancies in identical serums between two laboratories, unaltered strength in cases examined for several months and uniform reduction under treatment. Therefore, the changes in the Wassermann reactions of our patients have been the result of treatment.

Type of Patients.—Table 2 gives a summary of the cases of the eleven patients in this series. Only one patient had active syphilitic lesions. Three of the congenital and three of the acquired cases may

TABLE 2.—*Case Histories*

		Detection			Previous Treatment			
No.	Age in Years	Age in Years	Reason	Symptoms	Positive Tests	Arsphenamin in Dgm.	Mercury Subsalicylate, Gm.	Weeks Since Treatment
				I. Early Congenital (Intramuscular)				
1	2	0.15	Mother	Rash	3	0	*	48
2	3.5	0.06	Mother	Rash	5	2.6	12*	1
3	5.5	5	Mother	Interstitial keratitis	2	..	10	0.5
				II. Late Congenital (Intravenous)				
4	13	7	Interstitial keratitis	Interstitial keratitis; synovitis	11	49	55	7
5	12	10	Hutchinson teeth	Teeth; nervousness	4	21.5	31	7
6	28	17	Skin lesion; "indigestion"	Throat; skin lesion abortion	7	86	56	8
				III. Acquired (Intravenous)				
7	40	37	Gastric ulcer	Chancre; rash; gastric ulcer	7	67	35	9
8	32	30	Throat	Throat; abortion	8	105	58	13
9	38	36	Cerebral hemiplegia	Throat; alopecia; cerebral hemiplegia	3	19	70	1
10	33	29	Throat	Throat; abortion	6	62	35	1.5
11	34	19	Chancre on tongue	Chancre; throat	3	40	17	1

* Mercury by mouth or inunction.

be classed as "Wassermann-fast," if the amount of treatment and persistent positive Wassermann tests are accepted as evidence of this condition. It is possible that Case 6, which is classed as late congenital, may be acquired syphilis since the evidence is not conclusive. Case 11 was selected as a "maximum dose" control for the other ten who had received a preliminary course with minimum dosage.

ADMINISTRATION

We found no technical difficulty in the administration of mercurosal. Like other soluble salts of mercury it should be given two or three

4. Craig, C. F.: Variations in the Strength of the Wassermann Reaction in Untreated Syphilitic Infections, J. A. M. A. **62**:1232 (April 18) 1914.

times a week to obtain the best results. Thus while it may be suited for private practice, it is unsatisfactory for many hospital clinics, where it is difficult to induce dispensary patients to return more frequently than once a week. Insoluble or semisoluble compounds of mercury with a slower absorption rate are preferable in handling this class of patients, who only require the less difficult and more rapid intramuscular injections.

Intramuscular Injection.—Pain, discomfort and induration have been reported by two observers. Fifty-seven intramuscular injections were given in our series by a skilled assistant who had given about 10,000 injections of mercury. In one instance only was there a noticeable reaction. Compared with mercuric subsalicylate, the local reaction of mercurosal is less discomforting to the patient, but is no different than that of the benzoate or bichloridol (Metz). In our experience, such reactions are often the result of faulty technic, the material being injected outside the muscle. It is safe to state that mercurosal gives as small a percentage of discomforts and local reactions as any mercury compounds we have used, but it is in no way superior to the benzoate or bichloridol.

Intravenous Injections.—There is a majority opinion that mercurosal has no objectional effect on the vein. In our experience, limited to 148 injections in eight patients, most of which were in a single vein, no sclerosis of the vein could be determined other than that caused by the mechanics of venipuncture. Because of the obliteration of arm veins by previous treatment, two of the patients received all the treatment in the veins of the back of the hand. Even in the cases with a smaller blood flow and narrow lumen, no sclerosis occurred. However, Cole, Driver and Hutton [1] found sclerosis of the veins in four out of twenty-three patients. In one of our cases in which a small quantity was injected outside the vein, a burning sensation was felt which passed away within a few hours, and was followed by an induration present after six months.

Several authors have reported lassitude and weakness following injection. Our patients have made no comment in regard to this condition. One patient developed an apparent hypersensitiveness to the drug. The reaction consisted of erythema and urticaria on the trunk and arms, from one-half to two hours after injection, necessitating on one occasion confinement at home for three days. On the next visit an intradermal test produced an abnormal local reaction which could not be reproduced later. After a week's rest treatment was resumed, and the patient showed no further symptoms. Two somewhat similar reactions caused by mercurosal have been reported in the literature.

TOXICITY

Certain persons tolerate little mercury, others tolerate large doses. For this reason, no matter how bland the compound, certain cases may show evidence of intolerance. To obtain the full benefit of treatment, mercury should be pushed to the limit of physiologic toleration, and in so doing the patient should be carefully observed. In this respect the advantages of a drug of low toxicity are apparent, as it may be given in greater quantities. In our series no instance of ptyalism or stomatitis was observed. One patient, after receiving 0.01 gm. of mercurosal per kilogram of weight in three intramuscular doses, had diarrhea for three days. Two cases of slight nausea were reported.

Renal changes were followed by periodic urinalyses. Only a few cases showed the slightest evidence of irritation, and other conditions may have accounted for these changes. Evidently the dosage as given had no toxic effect.

EFFECT ON THE DISEASE

Since our cases were latent or tertiary, no opportunity was afforded to study the spirocheticidal effect of mercurosal. It appears from the literature that this drug alone is not sufficient to prevent recurrence of symptoms in early syphilis, and cannot be expected to take the place of arsphenamin. Because of the difficulty in differentiating psychic from physical improvement, it is impossible to give accurately the various subjective changes in health. To patients who have suffered from the severe arsphenamin injections and from the unpleasantness of certain mercury preparations which produce local irritation, the use of a bland compound tends to bring relief and a more optimistic point of view. In general, all patients felt distinctly better as regards appetite, sleep and general body functions. All patients whose cases were not complicated by intercurrent disease showed a gain in weight. While objective proof is limited, we feel that there has been a definite physical improvement in these patients besides the psychic effect of a new treatment.

EFFECT ON THE WASSERMANN REACTION

In recent years investigation on the therapy of syphilis has been concentrated on the arsphenamin preparations alone or in combination with mercury. Observations on mercury largely antedate the past seven years, and few references deal with its effect on the Wassermann reaction. Swift [5] showed that 37 per cent. of all cases were not serologically benefited by mercury treatment, and that nearly twice as many negatives were obtained by the injection as by the oral or inunction method. His statistics seem to indicate no appreciable difference

5. Swift, H. F.: The Effect of Treatment on the Wassermann Reaction, Arch. Int. Med. **6**:626 (Dec.) 1910.

in this respect between early and late syphilis. Haller states that the mercury quickly causes the Wassermann reaction to become negative, but that this false negative returns to positive when the administration of mercury is discontinued; while the time within which the reaction returns to the positive varies with the individual, as well as with the activity and the age of the infection. Craig [6] shows that continued treatment with the drug for long periods of time has little effect on the reaction in the majority of instances. Goodman,[7] and Nelson and Anderson [8] conclude that mercury subsalicylate alone does not influence the serum reaction. Cole, Driver, and Hutton report the same for mercurosal.

While the Wassermann reaction may represent grossly the inroads of syphilis, the individual production of immune bodies is so variable that the strength of the reaction may not accurately indicate the effect of the disease. It is with this knowledge that we record the serologic

TABLE 3.—*Reduction of the Wassermann Reaction by Mercurosal*

		Congenital		Acquired	
	Time in Weeks	I. Intramuscular, Percentage	II. Intravenous, Percentage	III. Intravenous, Percentage	Total Percentage
Before treatment	0	100	100	100	100
During treatment	5	83	83	88	85
	9	67	75	88	78
	13	33	58	63	53
	15	25	54	38	39
After treatment	3	42	67	50	53
	6	67	67	56	63
	11	67	67	38	55

effect of mercurial treatment independent of its clinical effect. In what manner mercury is able to achieve the serologic results here recorded, we are unable to discuss.

Reduction.—By periodically measuring the strength, it has been possible to demonstrate changes in terms of percentage of the Wassermann reaction before treatment started. As may be noted in Table 3 and Chart 1, the effect of the mercurosal is both transitory and permanent. The reaction reduced to 39 per cent. at the end of treatment, increased to 53 per cent. three weeks after the last injection, to 63 per cent. in six weeks, and then fell to 55 per cent. after eleven weeks had elapsed. Of the six cases technically negative at the end of treatment,

6. Craig, C. F.: The Wassermann Test, St. Louis, C. V. Mosby Co., 1918, p. 186.

7. Goodman, H.: The Effect of Mercury Salicylate on the Wassermann Reaction, Arch. Dermat. & Syph. **2**:193 (Aug. 20) 1920.

8. Nelson, K., and Anderson, E. A.: The Use of Mercury Salicylate in Syphilis, J. A. M. A. **65**:1905 (Nov. 27) 1915.

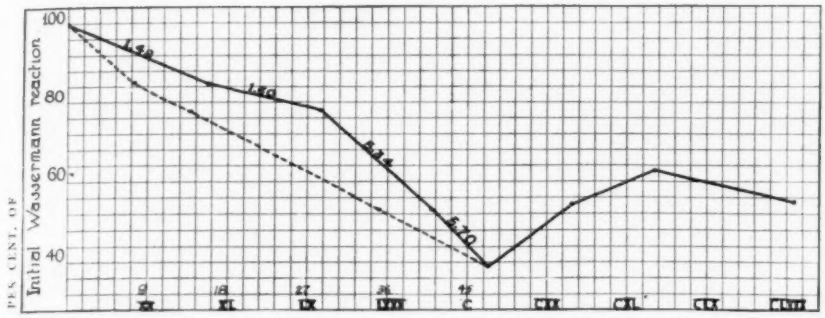

Chart 1.—Reduction of the Wassermann reaction. The figures on the ordinate represent the per cent. in terms of the strength of the Wassermann reaction before treatment. The continuous line indicates the reduction curve of ten patients in relation to the number of days (Roman numerals). Figures represent milligrams of mercurosal per kilogram of weight of the patient per week during the interval indicated. The broken line is the reduction curve in relation to the total number of milligrams of mercurosal per kilogram of weight (Arabic numerals).

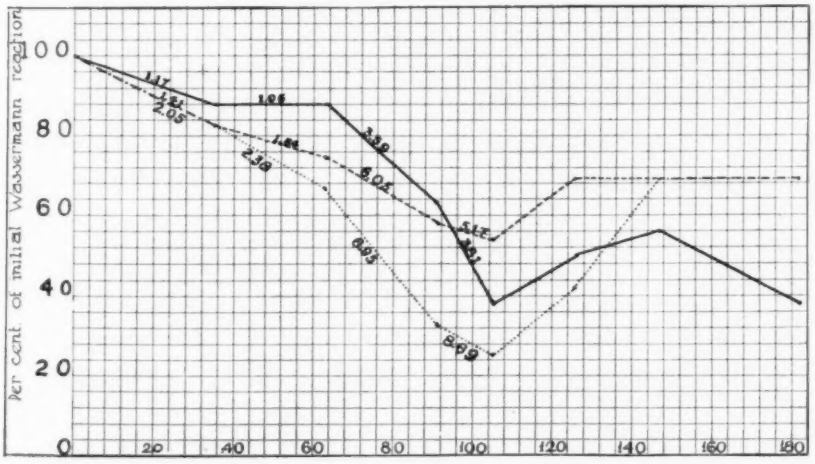

Chart 2.—Reduction of the Wassermann reaction. The continuous line indicates the acquired intravenous; the dash line, the congenital intramuscular; the dotted line, the congenital intravenous. The figures on the lines represent the number of milligrams of mercurosal per kilogram of weight of the patient per week during the interval indicated.

two became positive again. Of the ten cases, six showed an increase after three weeks' rest, three no change, and one gave a slightly lower reaction. After eleven weeks three of the intravenous cases showing an increase fell a second time. Mercurosal when given in appreciable doses reduces the Wassermann reaction.

Table 3 and Chart 2 compare three groups: (1) congenital syphilis treated intramuscularly; (2) congenital syphilis treated intravenously, and (3) acquired syphilis treated intravenously. The greatest reduction occurred in Group I, but by its subsequent return to 67 per cent. it showed no difference in permanent reduction from Group II. Group III, in which the primary fall and subsequent rise was not as great, maintained a favorable permanent level. It is interesting to note the rise after discontinuation of treatment in all three groups.

In six of the seven patients whose initial reaction measured from four to eight units, the reaction was brought to negative or doubtful during treatment. In four patients whose reactions ran above thirty-two units, a negative was not obtained, although marked reductions were made. These facts show the error in basing conclusions on the achievement of a negative as the result of treatment when the strength of the reaction has not been measured. It is indeed questionable whether the ordinary Wassermann test is a reliable guide to the efficiency of the treatment. The negative results of Goodman and Nelson and Anderson as to the effect of mercuric subsalicylate on the Wassermann reaction are due, in part, to their expectations that the routine test would be an absolute criterion of the benefit of treatment. If serums containing more than thirty-two units according to our scale were used, the test might always give a strong positive, even though the reaction were lowered to four or eight units. If the serum measured four or eight units, the negative would be more easily approached. Therefore, unless the strength of each serum is accurately measured, no conclusions may be drawn as to the exact serologic effect of treatment.

Individual Variation.—It is common knowledge that patients vary considerably in their reaction to drugs. Two patients failed to respond serologically to mercurosal. One of these patients with a resistent case, who had previously received a heavy course of mercury treatment, had a clinically active interstitial keratitis which improved most satisfactorily although the Wassermann reaction was but slightly reduced. The other patient, with a congenital case of thirteen years' duration, with a diagnosis seven years ago of interstitial keratitis and syphilitic synovitis of the knee, had previously received considerable treatment. He had a four unit reaction at the start, which remained unchanged during treatment. The other patients showed greater or lesser changes in their reactions.

Provocative Phase.—While our tests were not taken at sufficiently close intervals following the first injections, they throw some light on the question of a provocative mercury. Only one case gave any increase in the strength of the reaction; a temporary change from four to eight units, which in a few days fell to two units. Whether this change was the result of technical error or due to a sudden fluctuation in the reaction, cannot be definitely stated. It seems doubtful whether a provocative mercury reaction, if obtainable at all, can be found in any appreciable number of cases.

Dose.—Our results indicate that mercurosal when used in the dosage of 1.55 mg. per kilogram of patient's weight per week, has little appreciable effect on the Wassermann reaction, but at 5.51 mg. there is a decided reduction, as shown in Table 4 and Chart 1. Control Case 11, who started with the maximum amount of mercurosal, gave similar results, indicating that the increased reduction was not due to any

TABLE 4.—*Dosage and Reduction of the Wassermann Reaction*

	First to Ninth Week		Ninth to Fifteenth Week	
	Dose per Week in Mg. per Kilogram of Weight	Percentage Wassermann Reduction per Week	Dose per Week in Mg. per Kilogram of Weight	Percentage Wassermann Reduction per Week
Congenital, intramuscular.....	2.21	3.7	7.82	10.5
Congential, intravenous.....	1.48	2.8	5.61	4.7
Acquired, intravenous.....	1.12	1.3	3.70	9.5
Average.....	1.55	2.4	5.51	8.3

possible cumulative effect of the preliminary low dosage treatment. Although the reduction of the reaction corresponds in general with the total amount of mercury, the speed depends rather on the dose per kilogram of weight per week. It would seem that a cumulative effect was produced by catching the curve at its lowest point and producing a series of successive drops, and that success depended on the size and frequency of the dose. Therefore single treatments with the dosage commonly accepted, at weekly intervals are practically worthless. At least 0.3 gm. of mercurosal per 68 kilogram patient should be received either intravenously or intramuscularly each week in order to produce any marked reduction of the Wassermann reaction.

Mercuric subsalicylate has been extensively used in the treatment of syphilis. It is commonly administered by intramuscular injections at weekly intervals, in series of ten to twelve treatments, the adult dosage, 0.065 gm., being modified according to the weight and the tolerance of the patient. In spite of the unsatisfactory conclusions from comparing an insoluble compound (mercuric subsalicylate) and a soluble compound (mercurosal), it may be instructive to compare our figures with

those of other observers in Table 5 by expressing the results in terms of mercury per kilogram of weight per week. We have taken the liberty of estimating 68 kilograms per patient when no data were supplied by the authors. For Goodman, and Nelson and Anderson this figure is probably correct, as their statistics deal with soldiers, but it is rather high for the hospital cases of Cole, Driver and Hutton. Our figures have been separated into effective and ineffective doses and further into intramuscular and intravenous injection.

The comparison is interesting, since when expressed in terms of mercury it brings out the fact that even allowing for a slower absorption rate in the insoluble mercuric subsalicylate, the dosage used by Goodman, and Nelson and Anderson is too low to have any appreciable effect on the Wassermann reaction, a fact surmised by Goodman. It also explains the lack of results for the intramuscularly treated cases of Cole, Driver and Hutton, but does not account for the intravenous cases in which an adequate quantity was given.

TABLE 5.—*Dosage of Mercury*

Observer	Administration	Mercury per Kilogram of Weight per Week in Mg.		
		Subsalicylate	Mercurosal	Mercury
Nelson and Anderson	Intramuscular	0.72	....	0.43
Goodman	Intramuscular	0.95	....	0.56
Cole, Driver and Hutton	Intravenous	....	5.72	2.51
	Intramuscular	....	2.77	1.21
Belding and Holmes:				
Ineffective	Intravenous	....	1.27	0.56
	Intramuscular	....	2.21	0.97
Effective	Intravenous	....	4.52	1.98
	Intramuscular	....	7.82	3.42

SUMMARY

1. The titration method, when properly controlled, is an accurate and delicate means of recording the serologic results of treatment.

2. In persons with old untreated syphilis, appreciable fluctuations in the Wassermann reaction, as a rule, do not occur over a period of a few months, although during the active stages of the disease, "flare-ups" may take place from time to time.

3. Mercurosal, a soluble compound of mercury, when given in appreciable doses, reduced the Wassermann reaction in ten patients 61 per cent. of its previous strength. The effect was partly transitory, the permanent reduction, two and one-half months after treatment had ceased, being 45 per cent.

4. One and fifty-five hundredths milligrams of mercurosal per kilogram of body weight per week in the form of single weekly treatments had little effect on the Wassermann reaction, but a dosage of 5.51 mg. at more frequent intervals proved extremely effective. At least 0.3

gm. per week for an average adult is necessary to affect materially the Wassermann reaction.

5. Intramuscular injections proved as efficient as intravenous.

6. Marked individual variation in the serologic response to mercurosal was observed.

7. No evidence as to the existence of a "provocative mercury" reaction was obtained.

8. No marked difference was noted between persons with congenital and with acquired syphilis in their response to treatment.

9. The lack of effect of mercury on the Wassermann reaction, recorded by several observers, is due to too low dosage, the use of the ordinary Wassermann test as a standard, and the unfortunate selection of strongly positive patients.

10. When properly injected intramuscularly, mercurosal caused little discomfort to the patients. No sclerosis of the veins following intravenous injections was noted.

11. No signs of mercurialism and no evidence of kidney irritation were observed.

THE WASSERMANN TEST

XII. SULPHARSPHENAMIN IN THE TREATMENT OF SYPHILIS*

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Sulpharsphenamin has recently been featured in the treatment of syphilis. Several commercial preparations are now on the market, and the attention of physicians is frequently called to its superiority over the other arsphenamin preparations. It is the tendency of the medical profession to minimize the shortcomings and to overemphasize the advantages of a new remedy, and such sulpharsphenamin may be considered, although it has been used in Europe since 1919. It is my purpose to point out certain dangers which may arise from its careless use, particularly since toxicity tests in animals are not a safe guide for clinical administration.

In a study of the influence of sulpharsphenamin on the Wassermann reaction, the clinical results were observed in forty-four adults and nineteen children. In order that its complete serologic effect might be obtained, the drug was administered regularly and frequently, giving a higher weekly rate than in routine clinical practice, although the individual doses were not appreciably greater. Thus it has been possible to observe the toxic effect on patients and to determine fairly accurately the dose which, except in hypersensitive patients, may be administered with safety.

Sulpharsphenamin is an arsphenamin derivative which differs from neo-arsphenamin by the presence of an additional atom of oxygen in each side chain. The average arsenic content is 22 per cent. as compared with 30 for arsphenamin and 18 to 20 for neo-arsphenamin. It is recommended for its low toxicity, stability and spirocheticidal properties, and because it may be injected by the intramuscular and subcutaneous as well as by the intravenous route.

Sulpharsphenamin produced by the Laboratoire de biochémie médicale of Paris, and sulpharsphenamin manufactured by the Massachusetts Department of Public Health were used. The only apparent physical difference between the two was the color of the solution, the latter being a deeper orange. Twenty-five adults received a freshly prepared 10 per cent. solution intravenously, and nineteen adults and nineteen children a 20 per cent. solution either intramuscularly or subcutaneously. Dosage was determined by body weight, the standard being the equivalent of 0.9 gm. for a 68 kg. patient, which is the maximum dose of neo-arsphenamin. The greatest frequency of administra-

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tion was twice a week, except in three patients who were treated three times a week for a short period. Treatment was conducted over a period of from four to six weeks, the number of injections ranging from four to twelve.

TOXICITY

Toxicity tests in rats by the U. S. Public Health Service indicate that the minimum lethal dose is considerably less than the official standards of 120 mg. per kilogram of body weight for arsphenamin and 200 mg. for neo-arsphenamin. Of seventeen lots of sulpharsphenamin listed by Voegtlin, Johnson and Dyer,[1] the least toxic was 700 mg. and the most toxic 320 mg., while the average was 397 mg. for intravenous and 530 mg. for subcutaneous administration. Since most arsphenamins and neo-arsphenamins are well within the official requirements, sulpharsphenamin probably averages little less than the more variable neo-arsphenamin when administered intravenously, and considerably less if given subcutaneously. The Massachusetts preparation had a toxicity test of over 400 mg., and a number of rats survived doses of 500 and 600 mg. The toxicity of the French sulpharsphenamin was unknown, but probably ran about the same.

Voegtlin, Johnson and Dyer, from toxicity tests in rats, conclude that sulpharsphenamin is a drug of extremely low toxicity as compared with arsphenamin and neo-arsphenamin. The advertised dosage of the commercial preparations, when specific figures are furnished, gives a weekly rate of 0.82 to 1.34 times the maximum neo-arsphenamin dose on the basis of calculation used in this paper. Likewise, spirocheticidal and trypanocidal tests indicate the necessity for appreciable doses. Therefore, one naturally infers that this drug may be administered safely in larger doses than neo-arsphenamin.

Our clinical experience in respect to the therapeutic action of sulpharsphenamin on syphilitic lesions has been wholly satisfactory, but its success may be attributed to the use of fairly large doses. However, its effect on the patient, particularly when administered intravenously, has been unsatisfactory and in some instances of such a nature as to contraindicate its use. The toxic effect of the drug may be considered under the following headings: (1) local reaction, (2) anaphylactoid reactions, (3) dermatitis and (4) peripheral neuritis.

LOCAL REACTION

Owing to the recent contention that concentrated solutions of at least 25 per cent. should be used for subcutaneous and intramuscular injections, our results are open to the criticism that too low a concentration

1. Voegtlin, Johnson and Dyer: U. S. Public Health Report, Nov. 10, 1922; Reprint No. 797.

(20 per cent.) was employed. In our opinion, the difference is not sufficient to account for all the uncomfortable symptoms in adults, especially since the same concentration in children gave little trouble.

Unsatisfactory results with seven subcutaneous injections into the subscapular region warranted the abandonment of that method in favor of the intramuscular. One patient returned to the hospital eight hours after a 0.7 gm. injection complaining of excruciating local pain, which persisted in a subacute form for three weeks. Another, who received 0.4 gm., immediately was prostrated with acute pain along the intercostal nerves for six hours, and had more or less distress for a week. Two other injections produced marked induration and pain. No subcutaneous injections were given into the arm, but twice a decided local reaction occurred when a 10 per cent. solution was accidentally injected outside the vein. However, we realize that our experience is too limited to pass judgment on the subcutaneous method.

TABLE 1.—*Reactions*

	Adults				Children.	
		Intravenous		Intramuscular		Intramuscular
	Patient	Injection	Patient	Injection	Patient	Injection
Number	25	177	19	136	19	201
Local reactions:						
Number	2	2	11	14	7	10
Percentage	8	1	58	10	37	5
Anaphylactoid reactions:						
Early	8	13	1	1	2	2
Deferred	1	1	2	2	0	0
Total	9	14	3	3	2	2
Percentage	36	8	16	2	11	1
Dermatitis:						
Early	1		1		3	
Late	5		0		0	
Total	6		1		3	
Percentage	24		5		16	
Peripheral neuritis:						
Mild	8		1		0	
Moderate	4		0		0	
Marked	2		1		0	
Total	14		2		0	
Percentage	56		10		0	

Minor reactions, ranging from slight inconvenience to appreciable discomfort, were not uncommon in intramuscular administration. During the injection all the patients experienced a brief burning sensation followed by more or less soreness, which usually passed away by the next day. Pain occasionally made sleeping, sitting, walking and working difficult, and it was not unusual to palpate a small indurated mass one week after the injection. In one child a sterile abscess with dark turbid fluid resulted.

Patients vary in their ability to endure pain and to tolerate irritating intramuscular injections. In one patient with ascites and edema, marked local induration followed successive injections of sulpharsphenamin, bismuth and mercury. Twenty-five adults received sulpharsphenamin

intramuscularly. Six refused further treatment, nineteen continuing the full course. Of these eight experienced no trouble, five gave repeated reactions and six showed reactions in 12 per cent. of the injections. On this basis, in every 100 adult patients thirty-two will give no reaction, thirty-seven will have a reaction once in every eight times and thirty-one will manifest repeated difficulties. With one exception, the local reaction which occurred in 37 per cent. of the children was noticeably milder than in the adults. The type of patient most amenable to intramuscular treatment is the slightly adipose woman not given to energetic movement. It is unsuited for the active muscular woman or any man engaged in manual work, and is poorly adapted for the neurotic person.

The size of the dose is an appreciable factor, only four out of fourteen reactions occurring in adults when the patient received less than 0.4 gm. Children were but slightly affected and never received over 0.3 gm. If the intramuscular administration of sulpharsphenamin is confined to doses not exceeding 0.3 gm., painful local reaction will be largely eliminated.

ANAPHYLACTOID REACTIONS

Under anaphylactoid reactions are included all vagaries resulting from the administration of sulpharsphenamin except dermatitis and peripheral neuritis, which as examples of arsenic poisoning are considered separately in this paper. Anaphylactoid reactions may be classed as early, deferred and late, the last group ordinarily including dermatitis and neuritis. Except where noted, all reactions followed intravenous administration.

No severe reactions at the time of administration were experienced. Six patients showed a mild reaction in the form of nausea, flushing of the face and a peculiar taste in 4 per cent, of the injections, and four had a moderate reaction with vomiting or weak pulse in 3 per cent. of the injection. Nausea and vomiting were the predominating symptoms occurring in one fourth of the patients and in 5 per cent of the injections. They were also observed in one adult and two children following intramuscular treatment. Compared with arsphenamin, the intravenous administration of sulpharsphenamin produced more nausea and vomiting, although the concentration of the solution and the rapidity of administration may have been important factors. Several patients remarked concerning a certain taste during intravenous injection, a peculiarity which was particularly noticeable in one commercial preparation not reported in this series. Flushing of the face was noticed in one instance, and a contraction of the throat muscles was observed several times in one patient who subsequently developed a severe dermatitis. In another, a weak pulse was noticed on two occasions.

Few deferred reactions (within twenty-four hours) were reported, and except for dermatitis, none was observed in children. Four per cent. of the adults who received intravenous injections and 10 per cent. who received intramuscular injections showed on a single occasion headache, nausea and diarrhea. Late reactions other than dermatitis and neuritis were not present, and jaundice and digestive disturbances were conspicuously absent. Except in the dermatitis cases, no marked albuminuria was found. It is interesting to note that of two patients who had developed a hypersensitiveness to arsphenamin, one could not tolerate the slightest amount of sulpharsphenamin intravenously, while the other was able to take as much as 0.6 gm. per week without discomfort.

DERMATITIS

Arsenical dermatitis is a frequent expression of sulpharsphenamin toxicity, occurring in 16 per cent. of adults and children under treatment. In our experience, arsphenamin and neo-arsphenamin have never given such a high proportion of skin lesions.

The cases of dermatitis fall into two groups: (1) early and transitory, and (2) late and persistent. The early skin lesions, particularly in children, took the form of an erythematomacular eruption appearing first on the arms and legs and then extending over the body. The children were feverish, listless, fretful and nauseated. With one exception, in which the rash followed each injection, it passed away within three days and did not return on further treatment. It appeared at the end of the first week of treatment on the second or third injection. One adult showed edema of the feet with transitory local erythema. This form of dermatitis seems to be largely a hypersensitive response on the part of the patient and in this respect differs from the late form, which is conceivably due to the toxic effect of the accumulated arsenic in the body.

The late form was observed after the patients had been under intravenous treatment for at least four weeks and had received from four to eight injections. With one exception, it appeared after an interval of from three to eleven days after the last treatment. The affected patients received the equivalent of 0.92 times the total and 1.18 times the weekly maximum dose of neo-arsphenamin. A patient not in this series, who received a similar dosage, had a severe attack necessitating confinement in the hospital for four weeks. All showed an exfoliative dermatitis of the entire body, except in one case in which it was confined to the legs, and all but one patient exhibited symptoms of peripheral neuritis at the time of the eruption or later. One instance of edema of the face and feet without dermatitis was observed. The first appearance of dermatitis indicates the cessation of treatment for the time being.

PERIPHERAL NEURITIS

Symptoms of peripheral neuritis were noted in 36 per cent. of the adult patients, but in none of the children. It was more frequent in the intravenous than in the intramuscular cases, due partly to the heavier dosage and partly to the method of administration.

Subjectively, the affected patients experienced the sensation that their feet were "asleep." Two thirds of the patients complained of a similar tingling sensation in their hand and fingers, which was absent in the patients mildly affected. The symptoms were often limited to the first two phalanges, but not infrequently they extended over the entire hand and foot and as far as the lower leg. In the mild cases, the tingling was fleeting or transitory, occurring when the patient was tired, when the limbs had been held for some time in one position or when an unexpected movement such as the sudden extension of the arm or leg was made. Numbness was constantly present in those with moderate cases, and the hands and feet were described by the patients either as swollen or having a "velvet feel." A burning sensation in the feet was noted frequently and occasionally sharp shooting pains. Patients with marked cases complained of additional discomfort in the form of muscle pains, cramps and creeping sensations.

The objective symptoms were slight. Protopathic sensibility was intact, but the epicritic sensibility showed an impairment which varied with the severity of the subjective symptoms. The threshold for faradic stimulation (Martin's method) in three patients tested gave a depressed response 1.3, 2 and 6 times below the normal. The patellar reflex, except in one tabetic patient, was lively, in marked contrast to a more sluggish reaction in the same patients previous to treatment.

While dosage and intravenous administration seemed the chief factors in the production of the neuritis, the occupation and habits of the patient appeared to be predisposing causes. Two patients with fallen arches were among the chief sufferers from numbness, tingling, muscle pains and cramps, which were partially relieved by removing the strain. An elevator operator, locomotive fireman and saleswoman, whose work put a strain on the feet and legs, were particularly affected, and it is probable that the symptoms would have been less severe if their work had been of a different character.

The onset of symptoms occurred in five patients during and in eleven after the completion of the course of treatment. The mildly affected patients averaged an interval of 2.2 weeks between the close of treatment and the onset of the neuritis, the moderately 1.6 and the markedly 1.1. The longest interval was seven weeks. The average time after the starting of treatment was 6.3 weeks, the shortest three and the longest twelve. The duration of the mild cases was from one to two weeks,

while the moderate cases lasted in some instances more than twelve weeks.

DOSAGE

By correlating dosage with symptoms, it has been possible to approximate the dose below which, except in hypersensitive patients, toxic effects are unlikely to occur. Since patients with late dermatitis likewise had peripheral neuritis, our observations are confined to the latter condition. Also, since the greater part of the neuritis resulted from intravenous injections, only two cases occurring after intramuscular injections, the findings apply more particularly to the former method of administration.

The apparently low minimum lethal dose of sulpharsphenamin in animals as compared with neo-arsphenamin would indicate that the maximum dose for the latter might serve as a satisfactory therapeutic

TABLE 2.—*Dosage and Toxic Symptoms*

	Total Course				Weekly Rate			
	Intravenous Injection		Intramuscular Injection		Intravenous Injection		Intramuscular Injection	
Times Maximum Standard Dose	Total Number	Percentage Toxic	Total Number	Percentage Toxic	Total Number	Percentage Toxic	Total Number	Percentage Toxic
1.50-2.00	1	100	2	0	3	100	..	..
1.25-1.50	4	100	..	..	2	100	2	0
1.00-1.25	7	29	2	0	6	67	..	..
0.75-1.00	12	58	4	25	6	67	4	0
0.50-0.75	1	0	3	0	5	0	5	20
0.25-0.50	..	..	8	13	2	0	8	13
Total	25	56	19	10	25	56	19	10
Above standard	12	60	4	0	12	83	2	0
Below standard	13	54	15	13	13	31	17	12

standard for the administration of the former. It has been our custom to administer arsphenamin and neo-arsphenamin in a course of six injections over a period of five weeks. On this basis, using the accepted maximum of 0.9 gm. of neo-arsphenamin for a 68 kg. patient, the standard maximum would be a total of 0.0792 gm. per kilogram of body weight for the five weeks' course and 0.0158 gm. for the weekly rate. For simplicity, the doses are expressed in terms of this standard, which according to animal toxicity tests should be well below the maximum for sulpharsphenamin.

Comparing the percentage of toxic cases above and below the standard for the total and weekly dosage in Table 2, it appears that the weekly rate of administration rather than the total quantity is the important factor in the production of toxic symptoms. Except in hypersensitive patients, no trouble should result from the intravenous administration of sulpharsphenamin if three quarters of the standard maximum dose for the total course or weekly rate is not exceeded. The

correctness of this observation has been checked by producing slight symptoms in patients, not in this series, who received borderline doses. Therefore, the ordinary patient should not receive intravenously over 0.7 gm. of sulpharsphenamin a week.

Owing to the lower toxicity of intramuscular and subcutaneous injections, larger doses may be used for these forms of administration. The lack of symptoms in children who received between 1.5 and 2 times the standard dose present fairly conclusive clinical evidence of lower toxicity when the drug is administered intramuscularly. However, the two patients in Table 2 who developed toxic symptoms with comparatively low dosage, indicate the impossibility of arbitrarily regulating the dose. The local irritation produced by the larger amounts likewise limits the size of the dose, which should not exceed two injections of 0.4 gm. per week.

TABLE 3.—*Dosage and Severity of Symptoms*

Symptoms	Number of Patients	Times Standard Dose	
		Total Course	Weekly Rate
None	28	0.78	0.63
Toxic:			
Mildly	9	0.91	1.22
Moderately	4	1.06	1.02
Markedly	3	1.13	1.36
Total	16	0.99	1.20
Total	44	0.86	0.84

SUMMARY

1. Sulpharsphenamin, when administered in appreciable doses, is as effective in healing syphilitic lesions as neo-arsphenamin, but produces a greater proportion of toxic disturbances in the patients.

2. Animal experiments by Voegtlin and others indicate that sulpharsphenamin has a lower toxicity than arsphenamin and neo-arsphenamin. The frequency of dermatitis and peripheral neuritis in patients does not corroborate this opinion.

3. The intravenous administration of over 0.7 gm. a week for a 68 kg. patient frequently produces toxic effects.

4. Toxic symptoms more often result from intravenous treatment than from intramuscular, although the latter method does not insure their absence.

5. Dermatitis occurred in 16 per cent. of the patients irrespective of the dose, the more severe cases corresponding to the higher dosage.

6. Varying degrees of peripheral neuritis, though in no case pronounced, occurred in 56 per cent. of the adult patients receiving intravenous injections. In the intravenous cases this condition was present only when the dose exceeded three quarters of the maximum standard for neo-arsphenamin.

7. A high weekly rate of administration is more likely to produce dermatitis and neuritis than a correspondingly high total dosage.

8. The occasional hypersensitive patient shows toxic symptoms with low dosage.

9. Except for frequent nausea, anaphylactoid reactions at the time of administration are rarely encountered.

10. The subcutaneous and intramuscular injections cause more or less local discomfort, depending on the size and volume of the dose and the type of patient. The greater part of the local reactions occur when more than 0.3 gm. are injected.

11. Patients vary in their ability to stand intramuscular treatment. One-third suffer no inconvenience, one-third manifest local reactions one out of eight times, and one-third have repeated reactions in the form of pain or induration.

12. For intravenous medication, sulpharsphenamin possesses the advantage of convenience in administration over arsphenamin and of a more stable solution over neo-arsphenamin, but the frequent production of toxic effects renders it less satisfactory for intravenous therapy than the other arsphenamins.

13. Muscular women and men engaged in manual labor are unsuitable subjects for intramuscular and subcutaneous treatment because of interference with their activities. This form of administration likewise is contraindicated in neurotic patients who are likely to give exaggerated reactions.

14. Sulpharsphenamin is well suited for intramuscular injections in adipose women, children and other patients when the intravenous route has become difficult or impossible. If due care is taken in the selection of the proper dosage, it should prove a valuable adjunct in the treatment of certain classes of syphilitic persons.

15. Its promiscuous administration under the impression of its low toxicity is open to criticism.

ARSPHENAMIN ERUPTIONS RESEMBLING LICHEN PLANUS

A NEW CONCEPTION OF THE NATURE OF LICHEN PLANUS AS A CONSTITUTIONAL DISORDER

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BUFFALO, N. Y.

Two years ago, Buschke and Freymann [1] separated from the large number of arsphenamin eruptions a certain group the symptomatology of which seemed to justify a special classification. Other authors shortly afterward reported numerous cases which were based on the same or similar observations. In each of these a lichen planus-like eruption had developed during or after a "course" of arsphenamin treatment, generally on the skin, occasionally on the mucosa. Histologically the picture was not in all cases typical of lichen planus. During the course of treatment in these cases the clinical disturbances occasionally disappeared, although as a rule they remained refractory and frequently became worse if arsphenamin medication was continued. All reporters agree that a lichen planus-like exanthem was provoked by arsphenamin, or that a histologically and clinically genuine lichen planus developed as a response to the administration of arsphenamin. We still lack a satisfactory explanation of the cause of the development of these eruptions.

These disturbances are probably a reaction to an irritation of the skin which causes a tendency to develop lichen. It is common knowledge that the skin reacts to irritations of any kind in the sense of a certain tendency. Thus a syphilitic patient suffering from seborrhea develops a clinically different eruption from that of a psoriatic patient. Eczematous patients frequently react to trauma, nutritive disturbances and psychic influence by eczema. A psoriatic patient reacts to trauma with fresh psoriasis eruptions, a lichen patient with fresh lichen eruptions.

The French school has always laid stress on the disposition of the patient. The French believe that neuropathic persons are particularly predisposed to lichen. I do not agree with the conception that lichen develops essentially on the basis of a neurotic or psychic disturbance. Numerous other factors must be considered. The fact that lichen frequently develops on a nervous basis logically points only to a close relationship between the nervous system and the skin. Of equal impor-

1. Buschke, A., and Freymann, W.: Arsphenamin Eruptions, Med. Klin. 7:899 (July 24) 1921.

tance are the observations of the development of lichen in response to a visceral trauma, such as gastro-intestinal inflammation, obstruction of the bile duct by calculi, infection of the tonsils, anemia and other conditions. Furthermore, purely local factors, such as contact of the skin with leather, vaccination with lymph, gunshot wounds, etc., demand consideration. The infectious origin of lichen also appears probable in some cases.

In summarizing these clinical experiences, I believe that a uniform conception of the nature of lichen can be obtained only by making (1) the patient's diathesis and (2) the constitution of the skin responsible for the development of lichen. If in a case of lichen the nervous factor predominates, the explanation for the development of lichen must be the assumption of a reflex action on the skin by the vegetative nervous system to various internal and external irritations which affect the body with a tendency to lichen. We can imagine this same reflex action in a lichen which develops after a gastro-intestinal disturbance, gallstones or pressure of a truss, etc., and also in cases in which the lichen develops like a herpes zoster, ribbon like, or runs along the course of a nerve. The assumption of a vegetative neurosis in this sense would also explain why lichen is frequently hereditary and runs through families, while at the same time it would explain why in one case arsphenamin medication leads to a lichenoid eruption and in the other to the development of a so-called true lichen planus. Both forms are closely related to one another as to their genesis. The fact that arsenic can cure lichen as well as cause it fits into this explanation if we assume the points of attack of the drug to be in the vegetative nervous system. All changes in metabolism, whether caused by nutrition or medication, etc., must manifest themselves in the whole body chemistry; therefore also in the vegetative nervous system. They may consequently either cause or cure an eruption. The assumption that the arsenic has its points of attack in the vegetative nervous system as well as the conception that this is the cause of the development or disappearance of a lichen on a skin with a tendency to lichen, in accordance with the biologic reaction of the system to the drug, finds its analogies in the fundamental biologic law of Arndt-Schultz. This point of view also applies to other types of skin; for instance, the keratoid tendency in psoriasis, the pemphigoid (epidermolysis), the eczematoid arthritic, the keloid, pigmentary, etc., and the so-called spontaneous recurrent arsphenamin eruptions. The latter are easily explained by the assumption that the vegetative nervous system of the syphilitic person is in a state of increased irritability; it is either syphilitically infected or pathologically disturbed through the vasomotor disposition of the patient, and consequently responds to any irritation,

in this case to the arsphenamin medication, by the repeated development of a fresh eruption as long as the vegetative nervous system has not become normal; that is, cured. Logically, it seems advisable to limit the term specific eruptions and to speak only of characteristic eruptions, thereby laying less stress on the nature of the damaging drug and giving more attention to the pathologic process.

We have often observed the same agent provoking many different clinical pictures, according to the constitution of the skin; take the syphilitic agent which produces seborrheic, psoriasiform, lichenoid, frambesiform eruptions, etc. The lichen planus eruptions in particular I believe show that we must lay more stress on the exploration of the constitution of the skin, and that the purely clinical, histologic and etiologic factors are in a sense of secondary importance.

In summarizing I would state that the lichen planus-like eruptions and the so-called true lichen planus which follow arsphenamin medication both belong to the same group, even if they differ histologically. Neither of them represents a specific dermatosis. Both develop on a constitutional basis as a definite form of skin reaction. This reaction is provoked particularly by arsenic medication, but can also develop as a response to various other irritations.

Abstracts from Current Literature

GENTIAN VIOLET IN STAPHYLOCOCCUS SEPTICEMIA. D. T. SMITH and H. CASPARIS, J. A. M. A. **81**:2184 (Dec. 29) 1923.

Gentian violet in 1:1,000,000 dilution will inhibit the growth of staphylococci, while in 1:50,000 and 1:20,000 dilution it has no deleterious effects on white blood cells and growing tissue, respectively.

With these experimental facts as a basis, the authors gave to a 15 months old infant, suffering with severe staphylococcic septicemia, intravenous injections of gentian violet calculated to produce a 1:140,000 dilution in the body. The patient was cured.

The authors mention unpublished data of their own concerning the use of this dye in certain staphylococcic skin infections.

TRYPARSAMIDE: ITS ACTION AND USE. W. H. BROWN and L. PEARCE, J. A. M. A. **82**:5 (Jan.) 1923.

Although tryparsamide has a low therapeutic index as compared with arsphenamin and neo-arsphenamin, it possesses other properties that indicate its value in trypanosomiasis and neurosyphilis especially. These properties are its high penetrability and its power of enhancing or favorably influencing natural resistance to these diseases.

These special properties of the drug were first observed in studies of the authors on animal infections, but appear to apply equally well to human syphilis (neurologic types) as evidenced by the clinical report of Lorenz and his associates (J. A. M. A. **80**:1497 [May 26] 1923). The drug has one potential deleterious effect—the production of amblyopia.

SYPHILIS AS A FACTOR IN THE ETIOLOGY OF MENTAL DEFICIENCY. M. WEISS and L. IZGUR, J. A. M. A. **82**:12 (Jan. 5) 1923.

The authors contribute a clinical and serologic study of this question, which is still unsettled. At the New York City Children's Hospital, where this study was made, 1,633 inmates were examined from this standpoint. On the basis of serologic evidence less than 3 per cent. were syphilitic although a larger percentage presented the stigmas of congenital syphilis. The authors conclude that syphilis plays a minor, if any, rôle in the etiology of mental deficiency.

PITYRIASIS ROSEA, WITH PARTICULAR REFERENCE TO ITS UNUSUAL MANIFESTATIONS. J. V. KLAUDER, J. A. M. A. **82**:178 (Jan. 19) 1924.

This article contains a clinical description of the disease, with photographs illustrating some of the more uncommon manifestations. The unusual varieties considered are the giant, urticarial and the vesicular.

THE ACTIVE AGENT IN MILK INJECTIONS. O. BARKAN and R. F. NELSON, J. A. M. A. **82**:190 (Jan. 19) 1924.

The authors were struck with the variability of response to milk injections. Investigating the febrile reactions following parenteral injections of this sub-

stance into guinea-pigs and correlating the findings with their experience in man, they have reached the conclusion that the active agents in milk are the bacteria contained therein, together with the products of bacterial metabolism. In short, the reaction produced by milk injections is not due to the milk itself but to its bacterial life. As this is an unstable constituent, the authors have turned to other substances for protein shock therapy.

THE KOLMER COMPLEMENT FIXATION AS A SPECIFIC TEST FOR SYPHILIS. F. W. HARTMAN and C. E. REYNER, J. A. M. A. **82**:196 (Jan. 19) 1924.

The authors found the Kolmer test superior to the routine method. It is less sensitive than the cholesterinized antigen cold room fixation, but it gave no false positives. It proved superior to the Kahn test, giving 25 per cent. more positive reactions. In the light of the new test, weakly positive reactions take on a new significance. No positive reactions were found in diseases other than syphilis. The Kolmer test, if not biologically specific, is practically so.

THE CLEAN INUNCTION TREATMENT OF SYPHILIS. H. N. COLE, J. H. HUTTON and T. SOLLMAN, J. A. M. A. **82**:199 (Jan. 19) 1924.

In an earlier report (J. A. M. A. **77**:2022 [Dec. 24] 1921), the authors recorded the opinion that only that part of a mercurial inunction which was forced into the follicular openings was therapeutically effective, and that in the interest of cleanliness and concealment, the anointed skin could be cleansed afterward with benzine.

They now confirm this statement. In their present series of eighty-six patients whose skin was cleansed with benzine after mercurial inunction, they found an equivalent therapeutic response as well as an equal incidence of mercurialization in comparison with patients who were anointed without subsequent cleansing. It was also observed that pathologic conditions of the skin favor the absorption of mercury.

THE PROPHYLACTIC USE OF ARSPHENAMIN. A. ROSTENBURG, J. A. M. A. **82**:207 (Jan. 19) 1924.

A man with an erosive penile chancre, in which numerous spirochetes were found, had intercourse with his wife. Six days later, she was given neoarsphenamin. In all, four doses at four day intervals, each of 0.45 gm., were administered. The woman escaped syphilis.

A SMALL NEEDLE FOR AVOIDING LUMBAR PUNCTURE HEADACHE. C. S. BLUEMEL, J. A. M. A. **82**:209 (Jan. 19) 1924.

The author recommends a 3 inch, 24 gage needle which has a sliding sleeve to prevent breakage. The point should be extremely sharp. In 100 consecutive cases in which this needle was used, nine patients had headache, severe enough in only one case to confine the patient to bed.

DERMATITIS VENENATA FROM THE LACQUER ON THE BOXES OF MAH JONGG SETS. O. L. LEVIN, J. A. M. A. **82**:465 (Feb. 9) 1924.

The patient had a vesicular eruption of the face and hands, the cause of which is stated in the title. There was no recurrence after the removal of the cause.

DERMATITIS VENENATA FROM THE LACQUER ON THE BOXES OF MAH JONGG SETS. E. P. ZEISLER, J. A. M. A. **82**:466 (Feb. 9) 1924.

Zeisler's patient exhibited a severe dermatitis of the exposed parts which occurred after playing mah jongg. Application of the lacquer to the unaffected skin produced a vesicular dermatitis. These cases promise to be more frequent.

THE DANISH TREATMENT OF SCABIES. A. M. GREENWOOD, J. A. M. A. **82**:466 (Feb. 9) 1924.

This treatment was originated by Ehlers of Copenhagen, and was first seen in 1911. Lomholt, in 1920, reported favorably on it after treating 678 cases.

It is being used at the Massachusetts General Hospital, and in eighty-four cases has given good results. The treatment requires only twenty-four hours. A salve, of which the active agent is hydrogen sulphid, is employed.

The formula for the preparation of the ointment is given.

MICHAEL, Houston, Texas.

THE CLINICAL ASPECTS OF ERYTHEMA EXUDATIVUM MULTIFORME (HEBRA). BRUENAUER, Arch. f. Dermat. u. Syph. **142**, Pt. 2, 195-201, 1923.

The author describes four cases in which lesions developed on the extensor surfaces of the upper and lower extremities, the buccal mucosa and eyelids and particularly on the glans penis, prepuce and scrotom. The latter resembled syphilitic papules. In all of the cases an infection (grip and angina) had preceded the eruptions, which might explain the occasional epidemics of erythema multiforme.

LICHEN RUBER PLANUS WITH PIGMENTATION (LICHEN PIGMENTOSUS). OBERMILLER, Arch. f. Dermat. u. Syph. **142**, Pt. 2, 252-266, 1923.

The author reports a number of cases of lichen ruber planus which he found combined with pronounced pigmentation and describes them as a particular form of lichen planus.

ONYCHOMYCOSIS OIDIOMYCETICA. GUGGENHEIM, Arch. f. Dermat. u. Syph. **142**, Pt. 2, 305-309, 1923.

The fungus material was inoculated into the claws of a guinea-pig, where it caused the same disease picture as in the patient. Intravenous injection of the fungi also caused oidiomycosis of the internal organs in guinea-pigs. A fungus extract (oidiomycin) was prepared and a Pirquet reaction tried, which, however, was negative on the patient.

LETHAL CASES DURING AND AFTER ARSPHENAMIN MEDICATION. FRITZ, Arch. f. Dermat. u. Syph. **142**, Pt. 3, 434-452, 1923.

The author reports seven lethal cases, six of which showed a status lymphaticus. This does not appear to be a mere coincidence, and some relation must be assumed, as similar cases have been reported in the literature.

THE INTRADERMAL WILDBOLZ REACTION IN TUBERCULOSIS OF THE SKIN AND OTHER DERMATOSES. FREY, Arch. f. Dermat. u. Syph. **143**, Pt. 1-2, 211-225, 1923.

According to the author the Wildbolz reaction seems to be specific for tuberculosis, although a negative Wildbolz reaction does not exclude an active tuberculosis. The reaction seems to depend on the state of immunity of the

patient. The author tested this reaction on forty-seven cases of lupus, fourteen cases of tuberculids and thirty-four cases of nontuberculous dermatoses. The reaction was made in the ordinary way, only a distinct infiltration being considered as positive. Of the lupus cases, 82 per cent. gave a positive Wildbolz reaction. Fifty per cent. of the tuberculids were positive and nearly 100 per cent. of the nontuberculous dermatoses were negative. The control vaccinations showed that a positive auto-urine inoculated into tuberculin sensitive patients nearly always gave a positive reaction. In two cases a lupus lesion developed on the site of the reaction. This is explained by the creation of a locus minoris resistentiae through the Wildbolz reaction.

THE ETIOLOGY OF DYSHIDROSIS. RAJKA, Arch. f. Dermat. u. Syph. **143,** Pts. 1 and 2, 204-210, 1923.

The mycotic forms of this disorder are due to infection with a trichophyton of the gypseum group or *Epidermophyton inguinale*. Some forms of dyshidrosis are caused by pyogenous organisms. There are also cases of nonparasitic origin. A typical dyshidrosis is characterized by a sudden development of symmetrical vesicles which recurs frequently, particularly during the warm season.

PREVENTION OF INFLAMMATORY REACTION AFTER INTRAMUSCULAR INJECTIONS OF NEO-ARSPHENAMIN. FREUD, Arch. f. exper. Path. u. Pharmakol. **97,** Pt. 1 and 6, 54-60, 1923.

Colloidally dissolved substances such as gummi arabicum protect neo-arsphenamin against decomposition through an anesthetic. It can therefore be mixed with gummi arabicum and an anesthetic and be injected intramuscularly without causing a painful reaction. A dose of 0.3 gm. of neo-arsphenamin should not be exceeded. The author holds that clinically the intramuscular method is as effective as the intravenous one.

THE PHARMACOLOGY OF THE VEGETATIVE NERVOUS SYSTEM. HOFFMANN, Wien. Arch. f. inn. Med. **5,** Pt. 2 and 3, 543-552, 1923.

The author studied the combined effect of epinephrin and pilocarpin in the human system. In persons who have been given large quantities of epinephrin the saliva secreting effect of pilocarpin was considerably reduced, while it was found to be increased when the epinephrin was injected after the pilocarpin. If injected previously to pilocarpin, epinephrin also considerably reduced the sweat secreting effect of pilocarpin and considerably increased this secretion if injected after pilocarpin. The effect of this combination depends essentially on the tension (Erregungszustand) which is caused in the corresponding autonomous nerve center by the administration of the first drug.

EFFECT OF THE PAYR-PREGL-PEPSIN SOLUTION. FRANKENTHAL, Arch. f. klin. Chir. **123**:415-432, 1923.

The pepsin solution, to which the Pregl solution is added as a disinfectant, can be applied both subcutaneously and intravenously without harm. Thrombus formation has not been observed, nor does a "pepsin choc" occur. The digesting power of pepsin is increased by an addition of lactic acid, and has its strongest influence on fibrin and collagenous tissue. Nerve tissue is also damaged through contact. Cartilage, serosa and vessel endothelia are not influenced.

PUNCTURING OF LYMPH GLANDS IN PATIENTS WITH SYPHILIS. OELZE, Deutsch. med. Wchnschr. **49,** Pt. 3, 86-87, 1923.

The author emphasizes the diagnostic importance of the search for spirochetes in the lymph glands. He advises the following technic: Choose a gland of medium induration, squeeze well between thumb and index finger, insert a short thick needle and stir around in the gland. Then inject from 0.25 to 0.5 c.c. of physiologic sodium chlorid. Stir the needle again and after a few minutes aspirate the contents. Search for spirochetes in the ordinary way.

PELIOSIS RHEUMATICA. RAUTENBERG, Deutsch. med. Wchnschr. **49,** Pt. 4, 112-113, 1923.

The author advises a new therapy and reports the results in twenty-three cases. Instead of the old purely antirheumatic medication, he advises the intralumbar injection of 4 c.c. of a 0.5 per cent. procain sodium chlorid solution, which effects immediate and permanent cure. While in the ordinary course of the disease the dark red, almost violet color of the spots gradually turns pale brown and the lesions then disappear within from one to two weeks, the new method clears up the lesions within a few hours—at the longest within from one to two days. This therapy alters the pathogenetic conception of this disease. A rapid disappearance of the eruptions can be explained by assuming that there is a dilatation of the blood capillaries of the cutis and a circumscribed inflammatory edema and not skin hemorrhages as has hitherto been generally assumed. The disturbance is therefore located in the spine (central), to which the symmetric location on the lower extremities points, and which is proved indirectly by the effect of the procain on the cauda equina. Hence central trophoneurotic influences cause the disturbances in the peripheral vessel nerves of the skin. These are removed by the effect of the procain on the corresponding center.

THE TREATMENT OF AORTITIS SYPHILITICA. SCHOTTMUELLER, Deutsch. med. Wchnschr. **49,** Pt. 6, 175-176, 1923.

The author emphatically endorses combined arsphenamin mercury medication in the treatment of all forms of syphilitic aortitis. He advises a "permanent course" of arsphenamin medication, i. e., from 0.45 to 0.6 gm. every four weeks during from two to three years, supported by small doses of iodin and mercury. If this prolonged medication is continued, relatively advanced cases will respond to treatment.

THE ENDOLUMBAR TREATMENT OF TABES SPASTIC CONDITIONS OF THE LOWER EXTREMITIES WITH SODIUM BROMID. LIPPMANN, Deutsch. med. Wchnschr. **49,** Pt. 8, 245-246, 1923.

While experimenting with injections of sodium bromid into the spinal canal for the purpose of locating spinal tumors with the roentgen ray (urologists inject sodium bromid into the kidney pelvis to obtain contrasts for roentgenograms), the author noticed a beneficial therapeutic influence on tabes and spastic conditions of the lower extremities. He reports forty cases in which the patients were treated in this manner. As to the technic, a 1 per cent. solution of sodium bromid was injected in tabes and a 1.6 per cent. solution in spastic conditions. Ten c.c. was the maximum amount injected after the same quantity of spinal fluid had been withdrawn. The injections were repeated every fourteen days; however, not more than three times in tabes and up to

eight times in multiple sclerosis. The results were satisfactory. Disturbances occurred in two cases only, in which an acute chemical meningitis was provoked (cell increase up to 6,000 polymorphonuclears as well as increase of albumin). In either case, the meningitis subsided after forty-eight hours.

THE CLINICAL DIAGNOSTIC EVALUATION OF THE SUGAR CONTENT OF THE CEREBROSPINAL FLUID. WITTGENSTEIN, Deutsch. med. Wchnschr. **49,** Pt. 8, 246-248, 1923.

The author used the colorimetric method of Mandel and Steudel for determining the sugar content of the cerebrospinal fluid. In tabes and cerebrospinal syphilis the author found reduced, increased and normal sugar values with a distinct relation to the other spinal fluid reactions. It therefore appears probable that the sugar content of the spinal fluid has a diagnostic value in the differentiation of the syphilitic disturbances of the central nervous system. The diagnostic value can, however, be limited only to those cases in which the blood sugar content is normal and in which the sypinal fluid shows an isolated alteration, for the reason that diabetes mellitus also causes an increase of the spinal fluid sugar content in proportion to the blood sugar picture.

RHINOSCLEROMA OF THE NOSE, PHARYNX AND LARYNX. BLOHMKE, Deutsch. med. Wchnschr. **49,** Pt. 8, 267, 1923.

The case, in which operation was performed, showed an extreme degree of proliferation, as the entire os vomer had been penetrated by the rhinoscleroma masses.

THE COMBINED SURGICAL AND PHYSICAL TREATMENT OF KELOIDS. KROMAYER, Deutsch. md. Wchnschr. **49,** Pt. 9, 280-281, 1923.

The author advises the "subepidermal" excision of the keloid tissue. He also advises light, radium and roentgen-ray treatment subsequently to prevent the formation of new keloids. The operation is performed by perforating the keloid like a sieve with rotating cylinder shaped knives. Through these openings the keloid tissue is removed with a thin scalpel and scissors, without interference with the epidermis, hence "subepidermally." The wound heals up within from six to eight days. New formation of keloids is prevented by application of the quartz lamp (fifteen minutes' compression) and subsequent radium or roentgen-ray treatment.

FRAMBESIA AND SYPHILIS. Mueller, Deutsch. med. Wchnschr. **49,** Pt. 10, 309-311, 1923.

The spirochetes frambesia are located in the epidermis. There is no involvement of the mucous membrane or congenital transmission. The spirochetes in syphilis are located chiefly in the cutis. There are frequent involvement of the mucous membrane and transmission via the placenta. The deep location of syphilis makes it independent of climatic conditions, while the spirochete of frambesia has adapted itself to a tropical climate. Transmission via the surface of the skin is the rule in frambesia and, from the author's point of view, a substitute for the congenital mode of infection in syphilis.

ROENTGEN-RAY DIAGNOSIS OF ANEURYSMS OF THE AORTA DESCENDENS AND SYPHILITIC AORTITIS IN GENERAL. LENK, Fortschr. a. d. Geb. d. Roentgenstrahlen, **30,** Pts. 1 and 2, 134-138, 1923.

The author has coined the term "breadth difference of the aorta" (Breitendifferenz der Aorta) to designate the difference between the breadth of the aorta ascendums (measured in fencing position) and the aorta descendens (measured in the height of the isthmus). Normally the measure is from 0.5 to 1 cm. A larger positive breadth difference (asc. > desc.) points to syphilitic aortitis. Some cases of syphilitic aortitis may show an even enlargement of both measures, with a normal breadth difference (asc. < desc.). A negative breadth difference, however, occurs only in syphilis of the aorta and with preference in the aneurysm of the aorta descendens, independent of the location of the aneurysm.

HOW LONG AND IN WHAT CONCENTRATION DOES ARSPHENAMIN REMAIN IN THE HUMAN BLOOD? SCHREUS and HOLLANDER, Klin. Wchnschr. **1,** Pt. 42, 2089-2092, 1923.

The authors used the Abelin reaction for examining the arsphenamin content of the blood. In no case (thirty-one tested) could arsphenamin be traced in the blood later than three hours after the injection. Individual differences in the patients were not found. The various doses did not show any difference nor did repeated injections alter the mode of elimination.

SUPERINFECTION IN EXPERIMENTAL RABBIT SYPHILIS. STEINFELD, Klin. Wchnschr. **2,** Pt. 10, 446-448, 1923.

The author inoculated rabbits on the scrotum and testes. When the chancre was fully developed, it was cut out and the spirochetes obtained therefrom used for intravenous injection. The injections were repeated several times at two to three week intervals. The superinfection proved successful as multiple syphilitic manifestations developed on the skin.

INFLUENCE OF PROTEIN TREATMENT ON THE INTERMEDIATE METABOLISM AND THE BLOOD SUGAR. VOLLMER, Klin. Wchnschr. **2,** Pt. 12, 529-532, 1923.

Injections of parenteral milk albumin cause a progressive decrease of the acid elimination, which attains its climax on the third or fourth day. Compared with the controls, the acid elimination was reduced to one-fifth and as low as one-ninth of the normal. The author distinguishes between the effect of protein injections per se and a secondary effect which is due to cell decomposition. The actual protein effect consists in damage to the cell function, inhibition of oxidation and increased elimination of acid in the urine. We must also assume that the effect of protein therapy on inflammatory foci is due to an increased oxidative activity of the cells in the inflamed area. Thus specific proteins such as tuberculin in tuberculosis accelerate the rate of metabolism.

SUPERINFECTION IN SPIROCHETOSES. BUSCHKE and KROO, Klin. Wchnschr. **2,** Pt. 13, 580-581, 1923.

The authors experimented on white mice with the recurrens spirochete. The animals were infected with a virulent strain and were treated twice with 0.002 gm. of neo-arsphenamin twenty-four hours after the infection. On the eighth day after the infection and the sixth day after the injection of arsphenamin

ten animals were revaccinated with the same strain. In nine animals reinfection took place. As 70 per cent. of the animals were proved to have a latent infection, a superinfection was obtained in 62 per cent. of the cases. This is the experimental proof that a superinfection is possible in spirochetosis. As a further result of the experiments the authors found that arsphenamin seems to cure the experimental recurrence both clinically and hematologically, but that in a large percentage of the cases the parasites in the cerebrum are not all destroyed.

THE MEIOSTAGMIN REACTION. IZAR, Klin. Wchnschr. **2,** Pt. 14, 641-642, 1923.

The author, who with Ascoli was the discoverer of this reaction, uses it for the diagnosis of malignant tumors. He creates a deposit and a turbidity in tumor serums which are specific for these and which are not found in normal serums. As in the Sachs-Georgi and Meinicke reactions, the tumor serums are mixed in a certain proportion with hydro-alcoholic and hypertonic emulsions of pancreas and tumor antigens. The exact technic is given.

COLLOIDAL STAIN REACTIONS IN THE CEREBROSPINAL FLUID. KIRCHBERG, Med. Klin. **19,** Pt. 12, 387-388, 1923.

The author reports the modification of his Berlin blue reaction with indigo. He uses 0.3 c.c. of cerebrospinal fluid plus 1.5 c.c. of indigo solution. In positive cases a distinct precipitation takes place after from twenty minutes to two hours. The deposit is then measured in Nissl tubes and read twenty-four hours later. The reaction is considered positive if a deposit of from 0.08 to 0.12 c.c. is obtained after twenty-four hours. Six hundredths cubic centimeter is considered a weak positive. This method should be checked up on a larger number of cases.

THE HAIR IN CARCINOMA. H. SCHRIDDE, München. med. Wchnschr. **69**:1565, 1922.

The author says that certain alterations in the hair of the scalp and the body justify the conclusion that carcinoma is present in the internal organs. In carcinomas of all organs the hair showed the same alterations. Wherever the hair was exposed on the face and the scalp it was coarser and thicker and black. This was noted both in old and young persons suffering from carcinoma. The black pigmentation of the hair was found to be in direct proportion to the size of the carcinoma and the number of metastases.

THE TREATMENT OF CALLOUS CRURAL ULCERS. F. VON DER HUETTEN, München. med. Wchnschr. **69**:1663, 1922.

The author advises treatment of nonsyphilitic crural ulcer by circuminjecting a 0.9 per cent. solution of sodium chlorid. The patient is anesthetized with procain, and the borders and base of the ulcer are infiltrated with sodium chlorid solution under slight pressure. If necessary, the treatment is repeated in a few days.

PROPHYLACTIC ARSPHENAMIN MEDICATION. POEHLMANN, München. med. Wchnschr. **70:,** Pt. 8, 241-243, 1923.

The author reports a remarkable case in which a patient who had contracted an infected chancre infected his wife with the streptobacillus only and not with the spirochete, in spite of frequent contact.

THE CONTRACTILITY OF THE CAPILLARIES AND THE ADVENTITIA CELLS. MARCHAND, München. med. Wchnschr. **70,** Pt. 13, 385-387, 1923.

The author states that the adventitia cells play a rôle in all inflammatory processes which involve the connective tissue of the organs. Their activity is not limited to the large net and the mesenterium. As to the capillaries, the author does not believe that stimulation (epinephrin) causes an actual contraction of the capillary tube. Jacobi had also found that net capillaries were filled with blood in spite of epinephrin medication. The response of the capillaries to epinephrin must be considered, not as a positive contraction, but rather as a subsequent slackening of the expansion of the capillaries.

BIOLOGIC EFFECT OF THE ROENTGEN RAYS. BERG and ELLINGER, Strahlentherapie **14,** Pt. 3, 527-537, 1923.

The experiments of the authors show that when roentgen rays penetrate into solutions which contain atoms with a high order index (Ordnungsindex) the scattered radiation, as well as the autoradiation, is not altered to any extent, although they are both considerably reduced at a certain depth on account of the absorption coefficient of the water. In solutions of this kind the electron emission is, however, considerably increased. It follows that if according to Ellinger and Gans the biologic roentgen-ray effect is increased after a tissue has been infiltrated with thorium nitrate, this increase must be due to the increased emission of electrons. As in this case only a quantitive alteration of the biologic effect takes place, we must assume that the effect of the roentgen rays in general is a consequence of the emission of electrons.

AHLSWEDE, Buffalo, N. Y.

ARSENIC CONTENT OF SPINAL FLUID AFTER INTRAVENOUS INJECTION OF ARSPHENAMIN. J. GRINKER, Am. J. Syphilis **7**:617 (Oct.) 1923.

Cornwall and Myers discuss the arsenic content of spinal fluid after the intravenous administration of silver arsphenamin in relation to the type of neurosyphilis. When the lesions are essentially confined to the mesodermal structures arsenic can be detected in from 80 to 100 per cent. of fluids, as compared with from 60 to 90 per cent. when the ectodermal tissues are involved. The average quantity of arsenic in the spinal fluid in mesodermal syphilis is from 14 to 17 mg. per cent.; in ectodermal, from 4 to 9 mg. per cent. In mesodermal syphilis the quantity of arsenic in the spinal fluid is greatest at intervals of two and seventy-two hours after intravenous administration of silver arsphenamin, the average amount after seventy-two hours being slightly in excess of that found after two hours. In ectodermal neurosyphilis the largest amount is present two hours after intravenous administration, diminishing at subsequent periods.

WASSERMANN REACTION IN DIABETES. R. ROCKWOOD and A. H. SANFORD, Am. J. Syphilis **7**:679 (Oct.) 1923.

Rockwood and Sanford made serologic tests for syphilis in 501 cases of diabetes, 201 by the Noguchi method and 300 by the Kolmer technic. There were eight cases of coincidental syphilis and diabetes, three which may have been latent syphilis or false positives, and two of probable false positive reactions. There is, apparently, only a coincidental connection between syphilis and diabetes in this series of cases. This study leads the authors to conclude that the Wassermann reaction is rarely falsely positive in diabetes.

ROENTGENOTHERAPY FOR CARBUNCLES. R. W. LEWIS, Am. Surg. **78**:649 (Nov.) 1923.

Sixteen unselected cases of carbuncles treated by roentgen-ray irradiation are reported by Lewis. Only two of these sixteen cases required operative treatment. Sloughing and suppuration, and the skin sinuses through which this took place, were surprisingly small in the small and moderate sized carbuncles. The very large carbuncles resolved into enormous, sharply demarcated abscesses, which drained satisfactorily through sinuses formed by sloughing of the overlying skin. Pain was relieved following the roentgen-ray treatment in the majority of the cases, but this did not occur invariably. The duration of the small and moderate sized carbuncles seemed much shorter with roentgen-ray therapy then under operative treatment. The duration of the very large carbuncles seemed about the same with roentgen-ray or operative treatment. Cosmetic results of roentgen-ray treatment were far superior to those of operation.

CHANGES IN WEIGHT IN TREATED SYPHILIS. I. C. SUTTON, Calif. State J. Med. **11**:470 (Nov.) 1923.

In a series of twenty-eight patients treated by Sutton with bismuth and silver arsphenamin, careful records were made to determine the effect of the treatment on body weight. According to the medico-actuarial standards of weight and height, they were nearly all underweight. An intramuscular injection of bismuth was given three times a week until eighteen injections were given, at which time the weight was again recorded. After a four weeks' rest from treatment, the patient was again weighed. When bismuth was given, the weight usually decreased; when silver arsphenamin was given, it increased. There were several exceptions, usually in patients with central nervous system involvement. After treatment with silver arsphenamin, nearly all patients weighed more than at the beginning of the treatment, though they did not all recover completely the loss incurred during treatment with bismuth. Records of weight made from time to time after treatment was finished, however, showed in nearly all patients a permanent substantial gain. Sutton says that patients suffering from syphilis, almost without exception, need a fuller, richer diet. He put them on a large carbohydrate and fat diet, with all the protein they can take care of. By systematic overfeeding, the patients gain weight and feel much improved. Food phobias and constipation disappear, and they emerge from a vigorous course of treatment physically and clinically improved.

ANTIMONY TARTRATE IN NAGA SORE. R. B. ABRAHAM, Indian Med. Gaz. **58**: 479 (Oct.) 1923.

Naga sore is the name given to a very malignant and chronic form of ulcer which is met with by medical officers of tea gardens in Assam. The definite bacteriology of these ulcers is not complete. For the past two years Abraham has been using a solution of chlorinated lime with satisfactory results. The first few dressings are applied hot. This readily cleans the ulcer and healing rapidly takes place. Intravenous injection of a 2 per cent. solution of antimony tartrate, beginning with a 0.5 c.c. every other day, has led to prompt healing of the ulcer with local application even of plain water.

FACTORS INFLUENCING COURSE OF EXPERIMENTAL SYPHILIS. A. M. CHESNEY, J. Exper. Med. **38**:627 (Nov.) 1923.

Rabbits inoculated intradermally with active syphilitic virus, Chesney says, are within specified time limits less prone to develop generalized syphilis recognizable by clinical methods of examination than those inoculated intratesticularly. The effect of removal of the initial focus on the subsequent production of generalized lesions, which in former experiments by Brown and Pearce resulted in a greater incidence of the latter, was not observed by Chesney. In those animals in which the primary reaction was removed by castration, the incidence of generalized lesions was no greater and the time of occurrence was distinctly postponed. Procedures calculated to suppress the initial lesion (removal, insufficient treatment with arsenicals) resulted in a greater incidence, within certain time limits, of generalized lesions in the animals in which the interference with the initial lesion was instituted than in the controls. On this basis an hypothesis spoken of as a "law of inverse ratio" was formulated. The experiments described by Chesney would seem to indicate that under conditions as yet unknown there may be exceptions to his principle.

INITIAL LESION OF LEPROSY. L. GOMEZ, Philippine Islands M. A. J. **3**:277 (Sept.-Oct.) 1923.

One hundred cases of leprosy were investigated by Gomez. The most frequent symptom noticed by adult patients was attributable to the nervous system. The majority declare that they first noticed numbness of the lower extremities, usually more or less localized to a well defined area. Next in frequency as the first manifestation was the appearance of red spots, usually on the face, and most frequently on the cheek about the malar bone. In a few of these cases the spots were single, but in the majority they were either multiple or generalized. Next in frequency were white spots, occurring also most frequently in the face; in a few cases the spots were single, more frequently they were either multiple or generalized. In a few cases the first symptom noticed was the appearance of nodules, usually generalized, in one case in the ear only. The outbreak of leprosy is frequently not connected with systemic disturbances. The great frequency of nervous manifestation is remarkable. It is impossible to point out with certainty any particular lesion as the local reaction produced by the entrance of the micro-organism at that particular point, or the reaction produced by the micro-organism that has already invaded the body without leaving any sign at its point of entrance. It is probable that the microbe enters the body in many cases without producing external change, then multiplies in the lymph spaces and spreads in the body, especially along the perineural lymph spaces

CHRONIC PROSTATITIS AND LUPUS ERYTHEMATOSUS. E. T. BURKE, Lancet **2**:1187 (Dec. 1) 1923.

Burke reports a case of chronic gonorrheal prostatitis complicated by lupus erythematosus. Seven years previously the patient had been torpedoed. He could not be certain that the skin condition was not present then, but, if it was, it became worse afterward. Excitement, exposure to sun and wind in an open boat for two days and severe mental stress probably were the deciding factors. Burke feels that in every case of lupus erythematosus the venereal history should be inquired into and the genito-urinary tract examined to eliminate the possibility of the focus of infection being situated therein.

PARENTERAL PROTEIN THERAPY. G. URIBE CUALLA, Rep. de Med. y Cir. **14**:411 (Aug.) 1923.

In the case described by Uribe Cualla, suppuration had persisted in the left eyelid for months, new fistulas developing in spite of all treatment, including operative measures, heliotherapy and a vaccine. The sinuses seemed normal. Under subcutaneous injections of 5 to 6 c.c. of milk, the process subsided promptly and completely. The reaction to the second injection was formidable, with a rigor and high fever for two days, and there was a pronounced local reaction each time.

ACTION OF SKIN AND HAIR EXTRACTS ON GROWTH OF HAIR. L. SIVORI and U. REBAUDI, Riforma med. **39**:961 (Oct. 8) 1923.

Sivori and Rebaudi rubbed digested skin and hair from guinea-pigs in an ointment into the skin and found an increase in hair growth. A less pronounced stimulating effect occurred if they fed the preparations. Subcutaneous injection caused inhibition of the hair growth.

PRURITUS IN SYPHILIS. N. V. GRECO, Semana méd. **2**:293 (Aug. 16) 1923.

Greco declares that pruritus sometimes may be the clue to unsuspected syphilis, especially when it is persistent, with exacerbation toward night. The pruritus may be long in feeling the effect of treatment for the syphilis. It is possible, he suggests, that pruritus is a fourth form of cutaneous sensibility, with special organs and centers. Of those who have consulted him on account of pruritus in the ear, vulva, anus, face, scalp, neck, trunk or limbs, or general pruritus, absolutely nothing to explain it was found in a large proportion of cases except inherited or acquired syphilis, often unsuspected.

Society Transactions

NEW YORK DERMATOLOGICAL SOCIETY

Oct. 23, 1923

WALTER J. HIGHMAN, M.D., *President*

SCLERODERMA (OR KELOIDS?). Presented by DR. LANE.

Miss H. H., aged 23, had noticed the beginning of her present trouble about three years ago. On the left side of the neck there were two parallel, elevated, hard bands about 3½ inches (8.8 cm.) long and three-quarters inch (1.9 cm.) wide. The thickness of these bands was apparently about one-half inch (1.2 cm.). The color was slightly waxy, and a few very small vessels could be seen on the surface. Above these bands, extending to just below and back of the ear, was an irregular spot, smooth, not elevated, dead white and hard. This spot had appeared within the past few months. When the patient was first seen the impression had been that the two parallel lesions were keloids. With the appearance of the later lesion it seemed probable that the whole process was scleroderma. The parallel lesions presented an unusual appearance for that disease.

DISCUSSION

DR. WHITEHOUSE said that he did not remember having seen scleroderma in bands like that and raised to that extent, but he saw no reason why it should not be that condition. The patient had other patches, one adjoining the lower band, and another behind the ear, which were rather typical of localized scleroderma, and in his opinion the whole process was scleroderma rather than keloid.

DR. G. H. FOX said he thought the case presented the picture of keloid. He had seen that repeatedly in parallel ridges, but he had never seen scleroderma like that.

DR. TRIMBLE said he was inclined to make a diagnosis of keloid, although the arrangement of the lesions was rather unusual.

DR. BECHET said the condition impressed him as being a bandlike scleroderma. He had seen two or three similar cases, one of which had been presented by Dr. Weiss at the Manhattan Dermatological Society some years previously.

DR. CLARK also agreed with the diagnosis of scleroderma.

DR. HIGHMAN said the lesions seemed to be rather inserted into the derma than a hypertrophy, and it seemed to him to be a case of scleroderma.

SCLERODERMA EN PLAQUE. Presented by DR. WISE.

G. O., a girl, aged 8, came to the Vanderbilt clinic on Sept. 12, 1923. Her past history was negative. She presented two patches of reticulated infiltrated morphea-like lesions, which had been present for the past eighteen months. These lesions were situated one above and to the right of the left scapula,

and one above and to the left of the right scapula. On palpation the lesions were distinctly felt and were sharply defined; they were of a slight violaceous tinge at the periphery.

DISCUSSION

Dr. Highman said that it was a case of scleroderma.

ALOPECIA TOTALIS SUCCESSFULLY TREATED WITH THE QUARTZ LAMPS. Presented by Dr. Howard Fox.

J. S., a woman, aged 30, single, born in England, was first seen in January, 1922. About ten years before she had suffered from several small patches of baldness for about a year. The present attack began in March, 1921, as two small areas of baldness. In spite of treatment the process extended, and at the end of five months the scalp was entirely bald and the eyelashes had fallen. The eyebrows, axillary and pubic hairs were unaffected. Treatment with mercury vapor quartz lamps (mostly cooled air variety) was begun in January, 1922—six months after the scalp had been completely bald. No result was noted until sixteen months later, when several black tufts of hair and a general downy growth had appeared. At this time thirty-seven treatments had been given. Three months later, after a total of fifty treatments had been given, there was a thick growth of normal hair over the entire scalp except the lower part of the occiput.

DISCUSSION

Dr. Williams said he had had a case which was almost the counterpart of this, a girl of about 20, with complete alopecia, including the eyebrows but not the eyelids. She received an enormous amount of treatment with Alpine sun, and her haid had regrown at the end of the year. He was not sure, however, that the Alpine sun had anything to do with it. There were still a few small bald patches which were not affected by the Alpine sun or anything else.

Dr. Whitehouse said he did not know that his experience bore out Dr. Fox's belief that these cases of alopecia areata were obstinate. This case was of only six months' duration, and the earlier they are treated the more certain the results, just as certain in regard to total alopecia of six months' duration as of the areata type. Probably if this girl had not been treated she would not have had as much hair on top of her head as she now had. He firmly believed that the ultraviolet light was an effective agent in promoting the growth of hair. He had also learned from experience and from the literature that other forms of alopecia were also benefited by the Alpine light—seborrheic alopecia, etc. Probably, however, some of these patches would remain permanently bald.

Dr. Bechet inquired whether Dr. Fox had noted that the returning hairs were of the same color as those on the rest of the head instead of the usual white. It seemed to him that in his own cases the returning hairs were less apt to be white after the use of the quartz lamp than with other methods of treatment. This might be due to an unusual degree of stimulation of hair pigment by the violet rays.

Dr. Howard Fox said that the returning hair was ordinarily downy and nonpigmented, as after other forms of treatment or spontaneous return. In answer to a question as to experience with the quartz lamps, he referred to his report of fifty cases seen over a period of five years. In this series there

were several of completely or practically total alopecia of considerably more than six months' duration. He again reiterated his opinion that these lamps did not possess any extraordinary powers, but simply represented a convenient and cleanly method of causing local stimulation. Referring to Dr. Whitehouse's comments, Dr. Fox said he thought it was more difficult to induce a return of hair in cases of extensive or total alopecia than in those in which a few small patches of alopecia were present. He quoted Sabouraud's opinion that it was more important to treat the normal hair than the bald patches. This authority believed that in addition to the local treatment of the bald patch with chrysarobin, etc., treatment of the rest of the scalp with tar was helpful in preventing the spread of the disease.

BEGINNING DISSEMINATED MACULAR ATROPHY OF THE SKIN.

Presented by Dr. Wise.

L. N., a negress, aged 30, born, in the United States, married, a hair dresser, came to the Vanderbilt clinic on Oct. 13, 1923. She gave a history of having had an initial lesion three years ago, but no secondary symptoms. Two and a half years ago she noticed a breaking out of lumps over the trunk, following the use of medicine. These lumps never disappeared entirely, although at times they became flat. There were no subjective symptoms. There were present over the trunk, more numerous over the sides and back, many pea sized and larger papules and nodules. The lesions were freely movable with the skin, some showing atrophy and others hypertrophy. The Wassermann test was four plus.

DISCUSSION

Dr. Whitehouse said he thought it very difficult to interpret the lesions on that kind of skin. They were not deeply pigmented in this case, and he had thought that most lesions of the colored skin were deeply pigmented. He was inclined to disregard the patient's statement that no lesions preceded the condition. He also inquired whether inflammatory lesions ever left lesions of this kind, not hyperpigmented.

Dr. Howard Fox said that certain inflammatory lesions might leave pigmentation on either white or black skins, but that one would expect the pigmentation to be darker on a dark skin.

Dr. Highman said he thought it was a case of macular atrophy, primary or occurring secondarily in a syphilitic patient. It was possibly due to the effect of syphilis on the elastic tissue, for syphilis attacked the arterioles, and must have an effect on elastic tissue. If such destruction was found, the conclusion might be fairly drawn that this case was ultimately of syphilitic character; if not, the question would remain open as to whether it was syphilitic or idiopathic. In the last analysis, when a disease was called idiopathic, it was usually because the forerunning factors were unknown; but of course that was speculation. One should remember the original work of Finger, long before anything was known of the spirochete, which showed that in apparently normal tissue, previously the site of syphilitic lesions, there remained a perivascular deposit of round cells. With these reservations in mind, the possibility of clearing up this case would rest on the presence of foci of round, or possibly plasma, cells near areas of elastic degeneration.

Dr. Wise said that the biopsy findings would be reported at the next meeting.

A CASE FOR DIAGNOSIS. Presented by Dr. Clark.

J. D. S., a private patient, aged 33, born in Cuba, married, a merchant, had noticed for the past ten years an eruption in the mid-dorsal region of his back on the right side. From time to time there had been a slight sensation of itching and irritation, with a desire to have it rubbed or scratched, but never any severe itching. The lesion may have increased slightly in size during this time, but no other new lesions developed on any part of the body. He had always taken considerable exercise in the open air in a hot climate, and had always been a rather tall, thin man. He was supposed to have had some slight lung trouble two years ago, but tuberculosis was never demonstrated. Otherwise he had enjoyed good health. On the right side of the patient's back in the dorsal region was an elongated lesion about 10 inches (25.4 cm.) long and 5 inches (12.7 cm.) wide, paralleling the spinal column and about an inch (2.54 cm.) from the same, presenting at its upper half a slight, general increase in the thickness of the skin, with a faintly shiny lichenification of that part of the lesion and exaggeration of the normal skin lines. The lower part of the lesion consisted of a closely set follicular type of eruption without much thickening or shiny lichenification. The whole area showed a slightly brownish pigmentation. There were no angiomas present. The lesions had changed little, if at all, during the last month under treatment with a soothing oily application. The patient's urine was negative, and several Wassermann tests were negative. He presented himself for diagnosis.

DISCUSSION

Dr. Kingsbury said that from the general condition of the skin, the appearance of the lesion, and what he believed was a slight enlargement of the ulnar nerve, he thought it probable the man had leprosy.

Dr. Williams said that the long duration, the indefinite history and the absence of any striking subjective symptoms, the discovery on examination of simple pigmentation with perhaps a slight thickening was very suggestive of a nevoid condition. The man had probably had it all his life, and had observed it only ten years ago. In going over the troops at Brest one saw every possible variation, from a slight change in pigmentation to verrucous nevi. He recalled particularly a number of men who showed rounded patches along the side of or over the spinal column, in which the skin was altered very much as in this case. He thought this lesion belonged to that group.

Dr. Wise agreed with Dr. Williams that it was probably a nevus.

Dr. Highman said that his impression also was that it was a nevus, but that leprosy should not be ruled out without serious study, considering the patient's nativity. It might also be well to investigate more carefully whether he had taken any phenolphthalein, for the condition looked something like a fading phenolphthalein eruption.

SYRINGOCYSTOMA. Presented by Dr. Bechet.

T. S., a woman, aged 39, said that the lesions began on the chest and face five years previously. They consisted of shiny, semitranslucent, rounded, somewhat flattened lesions, arranged in groups on either side of the nose. Scattered through these lesions were occasional milia. On the chest were a dozen or

so similar lesions, but giving the impression of being more firmly embedded. The biopsy revealed the characteristic cystic formation derived from the sweat glands.

DISCUSSION

Dr. Whitehouse agreed with the diagnosis, and said that such cases were extremely rare, and that much depended on what could be found under the microscope. They belonged to a definite class, and the name would depend entirely on the microscopic picture. It would be interesting to know whether any one had found any line of treatment of service in these cases.

Dr. Trimble agreed with the diagnosis.

Dr. Howard Fox said he thought the term multiple benign cystic epithelioma would fit this case, although he did not care to start a discussion on the names that had been used to describe variations of this disease. Answering Dr. Whitehouse's inquiry, he stated that he had presented a marked case in which a histologic diagnosis of syringocystoma had been made, a profuse eruption being present on the trunk. He had treated one side of the trunk for comparison with fractional doses of roentgen ray, and after the eleventh treatment the eruption had entirely disappeared on one side.

Dr. Guy said that after having seen results obtained by Dr. Fox and others, he had used roentgen rays without success in two cases, the dosage varying from ¼ H fractional at weekly intervals to 1¼ at monthly intervals.

Dr. Wise told of two patients at the Vanderbilt clinic who had been cured with roentgen rays, and one patient with a case diagnosed as tricho-epithelioma with trichloracetic acid.

Dr. Clark told of a patient treated several years ago whose condition cleared up under the Kromayer light.

Dr. Highman said he thought it was a scientific misnomer to call such cases syringocystadenoma or any other type of adenoma, as no one knows the origin of the term. There was some disturbance which seemed mostly to arise from the sweat tubes as they arose from the coil gland to the surface of the skin. It would be well to temporize by calling them syringocystomas. All other terms are probably unwarranted and due to ultimate ignorance as to their histogenesis. There seemed little doubt that they were nevi in the broad sense of the term, and the noncommittal term of syringocystoma seemed the best one. He had seen one case of syringocystoma which presented a different picture from this one. It was a fungating condition, but not malignant. It was not a simple dilatation; it looked like adenoma of the breast. Dr. Highman said he had never seen a tricho-epithelioma, and in his opinion the twenty or twenty-five terms that have been used are inapplicable. It would be better to call the condition plain cystoma, and let it go at that.

BURSITIS OF SYPHILITIC ORIGIN. Presented by Dr. Schwartz.

C. B., aged 47, married, a driver, had lesions on the hands and right elbow. He had had a genital chancre fourteen years ago, and had received mixed treatment for two years. He had suffered from pains in the back and fingers for fifteen years. On the palmar aspects of all the fingers of both hands and on the proximal palms there were about four dozen pea to hazelnut sized firm and hard globular and ovoid tumors which were discrete and confluent to form mulberry masses. These were most prominent in the region of the joints

and along the line of the synovial membranes. The new lesions were softer, more elastic and translucent. On the extensor of the right elbow there was a hen's egg sized hard globular tumor. The Wassermann test was four plus.

DISCUSSION

Dr. Lane said the case was unusual. The diagnoses of syphilitic bursitis and of subcutaneous syphilis were perhaps suggested by the location of some of the lesions, but did not seem to be tenable. The lesion on the elbow was hard, probably a bony growth, and evidently attached to the bone. Bursitis if serous, is soft; if gummatous, it is also soft, and soon breaks down. This lesion might possibly be a syphilitic osteitis.

The leions on the hands were not in locations connected with bursae, and they were also hard. As for subcutaneous fibroid gummas, the lesions on the hands were not subcutaneous but in the skin. If these lesions on the hands were syphilitic, they must be extremely unusual. It was his opinion that they were not syphilitic, but most likely either fibromas or xanthomas.

Dr. Guy said that he would like to suggest a diagnosis of xanthoma tuberosum multiplex, but that an alternate diagnosis of multiple gummas also occurred to him because of the close resemblance of this case to one presented by the chairman in 1917. Dr. Highman's case on biopsy showed a syphilitic structure, and the lesions disappeared under antisyphilitic medication.

Dr. Williams said he thought that the general shape and firm character of the lesions suggested xanthoma tuberosum.

Dr. Clark agreed with Dr. Williams that xanthoma tuberosum should be considered.

Dr. Highman said that the patient to whom Dr. Guy had referred was shown at the clinical meeting of the American Medical Association in 1916. Dr. Highman's patient was a printer and did not have so many lesions nor such large ones. In addition to the tumors on the surface of his hands, he had a palmar syphiloderm and enlarged glands. The only person who agreed with the diagnosis was the presenter himself; the others thought the patient had xanthoma tuberosum. In spite of the fact that the lesions were diminishing under treatment, Dr. Highman said he was sure that antisyphilitic treatment would relieve the patient presented. He thought the lesions had nothing to do with the tendons or bursae; and when a man used his hands as this one did, lesions would develop not unlike the fibrous type of gumma that arises on the tongue or in the liver in late syphilis.

Dr. Highman, replying to Dr. Lane, said he thought that xanthoma had been described on the tendons.

Dr. Howard Fox said the lesion on the elbow corresponded with the cases of chronic fibroid syphiloma described by Parkes Weber, Goodman and Young and himself. He was not familiar with any case in which the disease affected the hands except that of Dr. Highman. The lesions were ordinarily seen on the elbows and knees. He agreed with Dr. Lane that the lesions were not related to either bursae or tendons. The clinical similarity to so-called juxta articular nodes, seen in the Far East, had been recalled by Goodman and Young. The speaker felt that xanthoma should be considered, although the lesions were harder than those of xanthoma and the color was not typical of this disease.

Dr. Highman said he had seen lesions on the tendon and on the tendon sheath, and told of the case of a rheumatic boy of 14 in whom such lesions existed which had nothing to do with syphilis. He did not think these syphilitic lesions had anything to do with the synovial system, or there would be an effusion into the tendon sheath or into the bursae. There did not seem to be any such movement as would be seen on the tendon sheath if the lesions arose there.

Dr. Schwartz said he had seen the case for the first time that night. He thought that the lesions were probably syphilitic in origin, but he did not feel that an absolute diagnosis could be made at the present time. He would report further after a biopsy and therapeutic test.

LICHENIFICATION. Presented by Dr. Howard Fox.

E. B., aged 51, a widow, born in the United States, was first seen in May, 1921. At that time she presented an eruption the size of a palm on the center of the chest, and smaller areas on the right elbow and knuckles of the left hand. A diagnosis of lichenification was made at that time, the patches being red, infiltrated, dry, slightly scaly, cross hatched, etc. She was treated with chrysarobin, which caused a severe dermatitis, followed by extension of the eruption on the chest and forearms. During the past two years the eruption had gradually increased in extent and severity, and was now present on the forehead, neck, chest and extensors of both extremities. The type of lesions varied considerably according to location. The eruption on the nape of the neck consisted of typical lichen planus papules. The papules on the chest were of larger type, while those on the extensors of the forearms and arms were more or less verrucous and resembled the shin guard type of the disease described by Lieberthal. A histologic examination made by Dr. D. L. Satenstein showed a simple inflammatory process, but no evidence of lichen planus.

DISCUSSION

Dr. Williams said it seemed to be a dermatosis, the result of chronic irritation; and it seemed as though exposure to the air was in some part a factor. Several cases had been presented before the Society in which repeated irritation from scratching had been followed by the development of distinct nodules in the skin.

Dr. Wise said he thought that Dr. Fox's suggestion that it was lichen planus was a good one, but the question of lichen planus in this patient must be considered with circumspection; for the eruption was not where one expected to see lichen planus, and exposure to the sun usually had nothing to do with lichen planus. Lichenification as a diagnosis did not correspond with Brocq's lichenization which presents only pseudopapules, not the criss-crossing of the skin lines which gives the impression of forming papules; therefore it could not be a true Brocq's lichenification. It would not be surprising if a further histologic examination would give more information; he expressed the hope that another biopsy be taken and reported later.

Dr. Trimble said there was no question but that it was an unusual and atypical case, although looking at the back alone, the eruption showed many characteristics of lichen planus, the lesions being small, flat, shiny, and a few umbilicated. The lesions on the arms would change that opinion somewhat; no doubt the whole condition was the same, although he would be more inclined to call it lichen planus than anything else on account of the appearance

on the back of the neck. As to the lesions on the arms, they might be hypertrophic lichen planus. Possibly the fact that the biopsy report was disappointing was because the biopsy was made from the arm and not from the region that resembled lichen planus. A hypertrophic lichen planus would not give a microscopic picture like the true lichen planus papule. It would be well to make a biopsy from the back of the neck. Dr. Trimble said that if he understood correctly, the lesions of the neck were comparatively recent—say of six months' duration—while the other lesions were a matter of years. That would fit in well with the fact that the woman had had lichen planus, the hypertrophic condition on the arms supervening on the regular eruption.

Dr. Clark called attention to the linear lesions on the side of the patient's neck, which were very suggestive of lichen planus.

Dr. Highman asked whether the patient had received arsenic. The localization of the lesions and the history certainly negatived any possibility of the condition being lichen planus; but everything can happen, and the condition might be lichen planus, even though the face was involved. But the lesions were clearly restricted to the exposed areas, so that one was compelled to think that in some way the dermatosis was connected with exposure. The papules on the back of the neck clinically might be considered simple lichen planus; others looked like lichen obstusus or hypertrophicus. The lesions on the face were not those of lichen planus. Dr. Fox had recently seen something resembling this in a case of Hodgkin's disease. The tough thickening of the skin suggested an old case of prurigo, and although this was not a case of prurigo, some of the lesions resembled prurigo nodularis in a remote way. He had never seen a case of lichen planus or lichen hypertrophicus that could not be identified as such microscopically. It was the one inflammatory condition of the skin that was almost invariably capable of such recognition. He suggested excising a small papule from the neck and one of those on the arm for further examination. The cornified lesions on the chest seemed lichenified. The one on the neck was not clinically lichenification in the generic sense, and it was not lichen planus. It would not be surprising if some day the patient bloomed out with mycosis. It would be interesting to know what Dr. Wise thought of this possibility.

Dr. Wise said he would be more likely to think of leukemia than mycosis fungoides. The clinical cutaneous manifestations of leukemia were so manifold that almost any form of eruption might turn out to be leukemia; but he had not thought of this diagnosis on account of the fact that the eruption occurred on the exposed surfaces of the skin only.

Dr. Howard Fox said that the varied opinions expressed seemed to accord with the confusion that had existed in his own mind while studying the eruption. He did not feel that a diagnosis of ordinary lichen planus was satisfactory. The lesions on the arms certainly suggested the case of shin guard lichen planus reported by Lieberthal. However, the location on the forehead, the long duration of the lesions on the chest, the lack of a typical violaceous color and the indefinite histologic findings were against the diagnosis of lichen planus. In answer to the statement that lichen planus did not follow exposure to the sun, he spoke of a case of his own in which a classic eruption of this disease had occurred following sunburn. The patient was a young boy who had worn a pair of trunks while swimming, and after the acute symptoms of sunburn had subsided an eruption of lichen planus had appeared

on his body and arms, being sharply demarcated along the border of the bathing trunks. There was no doubt in his mind that in the present case there was some relationship between the eruption and exposure to sun light. He would attempt to obtain another biopsy and report at the next meeting.

RINGWORM OF THE SCALP IN AN ADULT. Presented by Dr. Howard Fox.

A. G., aged 42, a full blooded negro, a laborer, born in the United States, first seen at the Harlem Hospital on October 18, presented an eruption of the scalp which had been present for about four weeks. It consisted of half a dozen rounded discrete and partly confluent patches situated on the upper portion of the parietal and occipital regions. The patches were covered by numerous short stumps of hair interspersed with a few unbroken hairs. The patches were practically devoid of scaling and varied from 1 to 6 cm. in diameter. Microscopic examination of epilated hairs showed mosaic-like masses of small spores surrounding them. No mycelium was noted, and no spores within the hairs were seen. Cultures were also made. The patient was married, but had no children. The source of infection was unknown.

DISCUSSION

Dr. Whitehouse said he had never seen such a ringworm picture in an adult. The clinical picture was the same as that seen on the scalp of children. He had seen cases of bald ringworm that were indistinguishable from alopecia areata.

Dr. Guy said that he had been inclined to wonder about the extreme rarity of microsporosis of the adult scalp after having seen two or three clinical (culturally unproved) cases in a group of 10,000 negroes isolated in a Southern training camp. On second thought this might not be so unusual, even if these had been proved cases, because they represented the result of examining about 200,000 men by the special examining board.

Dr. Williams said he had seen this patient in Dr. Fox's office. The scalp presented the same appearance as when shown before the Society. In the bald areas the hairs were broken off so short that it was difficult to remove any of them for microscopic examination. There was no collarette of spores visible macroscopically. He had removed some of the hairs himself for microscopic examination. Under the microscope each hair was seen to be surrounded by a mass of spores, but he had been unable to detect either spore or mycelia within the hair itself. The only bit of mycelium discovered was outside of the hair. He did not think it possible to make any diagnosis of the genus which produced the eruption from clinical examination or even from one microscopic examination in the majority of cases. This question must be decided by cultures.

Dr. Williams called attention also to the fact that circinate syphilid, which is fairly common in negro children and in negro adults, occurs in the white race fairly commonly in children but with great rarity in adults. In this case of tinea we have also a disease which is common in the children of both races, but which is rare in adults of the white race. He said also that if he remembered rightly Sabouraud had reported that the tinea of the scalp caused by the tricophyton fungus would commonly persist into adult life, but that the microsporon infection usually disappeared at puberty.

DR. WISE said that it was the third case of microsporon (?) ringworm of the scalp in an adult shown before the local societies: the first by Dr. Parounagian (a white man), a second one which he himself had presented, and this one.

DR. BECHET said that the interesting feature of the case, other than the fact of its occurrence in an adult, was that the patient was a negro. Dr. Guy had observed three cases occurring in negroes, and Dr. Wise had reported two others, one of which had been shown at the Dermatological Section of the Academy at its last session. It would be interesting to know why tinea of the adult scalp occurred with greater frequency in the negro race.

DR. TRIMBLE said that ringworm of the scalp in any adult was rare, although he knew of no one in New York who had shown ringworm of the scalp in an adult white person—all had been in negroes. Dr. Rothwell, his Chief of Clinic, had found one case also in a negro, which was later reported in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY. The case shown by Dr. Fox was the best case he had ever seen from the standpoint of extent.

DR. LUETHLEN (Vienna) said that he had observed many such cases in adults in Vienna.

DR. WHITEHOUSE said it interested him very much to have Dr. Luethlen say that ringworm of the scalp in adults was common in Austria. There are few cases in this country.

DR. HIGHMAN said that Lewandowsky had reported a case of kerion due to *Microsporon audouini*. This was the third case of this kind that Dr. Fox had presented and that he had seen in New York. In Vienna he had seen cases of microsporon reported culturally, but here it is extremely rare, and as Dr. Williams had pointed out, it was impossible to determine the parasitic nature clinically. Microscopically the organisms ensheath the hair, but mycelia were seen in the shaft near the root.

DR. HOWARD FOX said he was aware that in ringworm of the scalp in an adult one could not distinguish between the large spore and the small spore types except by culture. Clinically this case resembled the ordinary microsporosis seen in children. The question of the incidence of ringworm of the scalp in white and in black adults could better be answered when his assistant, Dr. Fowlkes, had completed a study of this subject which he expected to publish.

SADDLE NOSE TREATED BY PLASTIC SURGERY. Presented by DR. HOWARD FOX.

A. M. D., a woman, aged 25, had been previously presented (ARCH. DERMAT. & SYPH. **7**:273 [Feb.] 1923) for typical stigmas of congenital syphilis including marked saddle nose. The latter deformity had been subsequently treated by Dr. Jay D. Whitham, and the patient was now presented to show the result. The report by Dr. Whitham was as follows: "Prior to operation a plaster cast of the face was made and the nose on the cast was restored to its desired shape by the use of modeling wax. The wax when removed from the cast gave an exact model for the graft. The graft was removed from the left ninth costal cartilage under ether anesthesia, and inserted in its new bed under the skin of the nose after being carefully cut to conform to the model. The new bed for the graft was prepared through an incision between the eyebrows at the root of the nose about one-half inch long. The graft was made long to force down the tip of the nose, and the wound was closed with interrupted silk-

worm gut sutures. Recovery was rapid and uneventful, healing taking place in both wounds by first intention."

MAJOCCHI'S DISEASE. Presented by Dr. Wise.

H. G., a boy, aged 15, born in the United States, came to the Vanderbilt clinic on July 30, 1923. His mother said that ten years ago he developed a number of spots which looked like mosquito bites; these did not disappear, and afterward he had erythematous and pigmented spots. He had had many of the symptoms which accompany Majocchi's disease. The patient presented a marked reticular livido of the extremities. The backs of the arms and the lower part of the lumbar region extending down to the buttocks, thighs, legs, right groin, inner side of the left thigh and calves showed areas of pigmentation. The skin in between these plaques, which were palm sized and larger, appeared to be deeply pigmented, the skin showing recticulation as in livido. These pigmented patches were irregular in outline, and presented pin point and pinhead telangiectasias, although no purpuric spots were present. The Wassermann test was negative.

DISCUSSION

Dr. Howard Fox agreed with the diagnosis.

Dr. Williams said he thought it was the most probable diagnosis.

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS

Regular Meeting, Nov. 8, 1923

Paul E. Becht, M.D., *Chairman*

PAGET'S DISEASE. CARCINOMA OF THE BREAST. Presented by Dr. Gilmour.

The patient did not speak English. Her family history was negative. Three years ago a redness appeared on, and for a short distance around, the left nipple. The breast and nipple remained normal until a hardness appeared eight months ago. There had been no itching, but moderate "sticking" pains in the breast at times since the redness appeared. Examination revealed that the left nipple was retracted and fixed. An area extending to the edge of the areola was red, slightly granular and glazed. It was slightly moist. The margin was sharply defined. This area was much indurated. An enlarged indurated gland was present in the left axilla.

DISCUSSION

Dr. Levin said that the patient appeared at the Cornell clinic three days prior to presentation. The condition would be treated surgically by complete excision of the breast and adjacent lymph nodes.

URTICARIA PIGMENTOSA WITH HAIRY LESIONS RESEMBLING PIGMENTED NEVI. Presented by Dr. Scheer.

J. F., a white girl, aged 2½, was brought to Dr. Fordyce's service at the Vanderbilt Clinic for an eruption which appeared about two and one half months

after birth. The eruption first appeared on the back. The child presented a generalized eruption, most profuse on the back; lesions were scattered on the forearms, legs, neck, abdomen and chest. The lesions varied in size from ⅛ to 1 inch (3.17 mm. to 2.54 cm.) in diameter. The largest ones were on the back. They were roughly oval or circular; those on the neck were elongated, running transversely across the neck, giving a zebra-like effect. There were also about a dozen smaller lessions on the face, of a similar character. The color of the lesions varied from fawn to violaceous, most being dark brown. Nearly all the lesions on the back were hairy, making their appearance indistinguishable from hairy pigmented nevi. Those on the chest, abdomen and face showed no hair. Some lesions showed moderate infiltration, especially on the lower extremities. The surface of the lesions on the back in some areas presented a shiny or slightly lichenified appearance. At a distance the eruption resembled a phenolphthalein rash in color. Rubbing or scratching the lesions caused a reddening and elevation. A biopsy showed urticaria pigmentosa.

DISCUSSION

DR. WILLIAMS said the lesions were very abundant; but as for the hair, if one looked closely it would be seen that there was as much hair on other parts of the body as on the pigmented part. It was a hairy child, and some of the hairs occurred where there were lesions of urticaria pigmentosa.

DR. ABRAMOWITZ said that the skin lesions that the child presented when first brought to the clinic were large brown macules covered with more hair than the surrounding normal skin possessed. The appearance of the lesions suggested a hairy and pigmented nevus; but the multiplicity, size, and presence of urtication on friction suggested urticaria pigmentosa. A section of one of the pigmented lesions showed numerous mast cells, and thus confirmed the diagnosis of urticaria pigmentosa.

DR. TRIMBLE agreed with what Dr. Williams had said about the hair. It was more profuse in the lesions, though it could be readily observed on the healthy skin; the circulatory activity in the lesions seemed to have stimulated the hair.

MULTIPLE BENIGN CYSTIC EPITHELIOMA. Presented by DR. LAPOWSKI.

R. S., a woman, aged 57, had had four children, all of whom had died in infancy from an unknown cause. Her husband had died of apoplexy four years before. She had never been sick. The lesions on the face began about a year ago, first on the left side, gradually spreading to the present location. As presented she showed, scattered over the entire face, numerous tubercular lesions of shiny, pearly color, varying in size from that of a pinhead to a trifle larger. They were round, smooth, hard, and looked vesicular. Some had slight central depressions. On puncture they bled freely. In the center of the face the cystic tumors were on an erythematous area (rosacea). The rest of the body and mucous membranes were clear.

DISCUSSION

DR. WISE said that a careful examination of this case led him to believe that it was a hydrocystoma. The lesions were too cystic for multiple benign epithelioma, and the patient said that the cysts flared up when exposed to heat. The term "cystic" as applied to multiple benign cystic epithelioma referred to microscopic cysts, not clinical manifestations.

DR. LAPOWSKI replied that the point which Dr. Wise brought out, namely, the transparent pale appearance of the lesion, was quoted in every textbook as a characteristic sign of cystic adenoma. Clinically the distinction cannot be made; it can be made only microscopically.

DR. HIGHMAN said that clinically the case conformed to the disease mentioned in the diagnosis, benign cystic epithelioma. He saw the point which Dr. Wise made; few of the lesions glistened, as Dr. Lapowski pointed out. It was difficult to differentiate between the two, although the diagnosis could be made clinically. The microscope would have to be the court of last resort. If it were the condition that Dr. Wise mentioned, it would be easy to express some fluid from the lesions. The duration of the disease and the fact that the lesions flared up on exposure to heat proved Dr. Wise's hypothesis, but did not exclude cystic epithelioma. The history of hydrocystoma was usually that of a more acute onset, the skin having little opportunity to return to normal. The case as presented seemed to be benign cystic epithelioma.

DR. ABRAMOWITZ said that the patient gave a distinct history that the lesions on her face began a year ago last summer; that they had somewhat improved in appearance in the cooler months, but even then became worse when she worked over a hot stove. Looking at the lesions closely, they all seemed to be hard, shiny, translucent, superficial, and deep-seated vesicles. One vesicle punctured, quickly collapsed, but bloody contents escaped. They had had a similar case, diagnosed by others as multiple benign cystic epithelioma; they thought it was hydrocystoma, and their opinion was confirmed by the microscope. It was not necessary with a diagnosis of hydrocystoma for all the lesions to disappear in cool weather, for exposure to heat indoors was sufficient to bring out a new crop of vesicles. Dr. Abramowitz agreed with Dr. Wise that the case just presented was one of hydrocystoma.

DR. MCCAFFERTY said he thought it was a case of hydrocystoma. He had recently seen a case of syringoma at the Skin and Cancer Hospital, in which the lesions were located around the eyes and on the chest. These lesions resembled also multiple benign cystic epithelioma. They were pinkish red, pinhead sized slightly larger papules, with a firm consistency. The case in question was probably one of hydrocystoma, inasmuch as the lesions were definite cysts.

DR. GILMOUR agreed with Dr. Wise, for although the clinical picture as described in the books might be the same as multiple benign cystic epithelioma, when these lesions were pricked he had seen some serum come out of two of them, but not very much. He had asked the woman about the family history, and she had said that none of the family, parents, brothers or sisters, had had any similar condition. On the other hand, it would seem that if she had multiple benign cystic epithelioma, she would have had it for a longer time than stated.

DR. WISE said that the woman showed true cysts in the upper layers of the skin. If one of the lesions was pricked with a needle it collapsed, which was against benign multiple epithelioma.

DR. LEVIN said that three possible diagnoses had been mentioned: multiple benign cystic epithelioma, syringoma and hydrocystoma. In the last, the lesions would not persist for a year, and they would look more crystalline and show a tendency to dry up. When pricked there was an escape of blood from the lesion and no thin watery fluid as occurred in hydrocystoma. Although multiple benign cystic epithelioma showed a clinical resemblance to syringoma, the latter tended to occur on the chest, back and around the clavicles, was more widespread

in its distribution, and often showed a fawn color suggestive of xanthoma. The lesions in this case were on the face around the nose, were small, hard and shiny. He favored the diagnosis of multiple benign cystic epithelioma. A distinction should be made between this condition, tricho-epithelioma, and the other condition mentioned, syringoma. The terms had been employed during the discussion as if they were the same condition.

Dr. Trimble said he had examined the case fairly well, and he thought it was a case of colloid milium. As Dr. Levin had said, the condition had lasted too long for hydrocystoma. Every one knew that tricho-epithelioma, or multiple benign cystic epithelioma, etc., all meant the same disease. In all of the cases of benign cystic epithelioma he had seen, the lesions were more scattered, namely, on the face, neck and chest. In the case under discussion, there were no outlying lesions. The color, the fact that it was confined to the face, that it had lasted a long time, and that the lesions were stationary, made him feel that it was a colloid milium.

Dr. Lapowski asked how many lesions there were on the face in colloid milium—more than ten or twenty?

Dr. Trimble replied that the fact that this patient had more lesions on the face than he had ever seen in a case of colloid milium did not make him change his opinion, clinically speaking.

Dr. Walzer said that this case answered almost perfectly to the description of multiple benign cystic epithelioma. The lesions looked cystic, but were not; they looked vesicular, but were not. They had remained stationary ever since their first appearance. The patient had been under observation for four months, and the lesions had been practically at a standstill all this time.

ANGIOMA SERPIGINOSUM. Presented by Dr. Lapowski.

C. T., a woman, aged 25, was married and had had one pregnancy. There was no tuberculous history in the family. Her present trouble began about six months before as a small "pimple" on the face which was painless but had gradually extended. When first seen about three months before, she had a penny-sized annular dark brown patch with an atrophic center on the lower part of the right cheek. Two weeks later she received one carbon dioxid treatment, and the lesions had been extending since, having more than doubled in size. At present she showed on the lower part of the right cheek, one plaque about 2½ by 1½ inches (6.3 cm. by 3.8 cm.), irregular in outline, of a dark violaceous color, and apparently composed of a number of smaller patches. The border was serpiginous, slightly elevated, of a lighter shade, almost red, sharply outlined and composed of minute vascular points. The lower part of the plaque was atrophic in the center, while the upper part was covered with a thin adherent dry scale, which on removal showed large patent follicular openings. On diascopic pressure, there was no change in color. Along the border of the plaque were a few scattered vascular red points, pinhead in size. Below the plaque were two small patches; the posterior one larger and covered with a dark crust, the anterior one linear in form and composed of a number of pinpoint vascular spots. Both cheeks were covered with many pinpoint scars, comedones and enlarged follicular openings. There were two pinhead sized angiomas on the chest and one on the face. The submaxillary glands on the right side were markedly enlarged and tender. The Wassermann test was negative. The diagnosis was angioma serpiginosum.

DISCUSSION

Dr. Highman inquired whether the term angioma serpiginosum as used was in the literal sense of the term or in the sense used by Hutchinson. A condition might be a serpiginous angioma without conforming to the term angioma serpiginosum.

Dr. Wise said that he and Dr. Howard Fox had described three cases of angioma serpiginosum, and none of them looked like this case. The cases described were characterized by delicate telangiectases. This case was not like the ones described. In his opinion, it suggested a dermatitis artefacta, as some one had mentioned. It might also be a hemorrhagic form of lupus erythematosus. He could confidently assert, however, that it did not resemble any form of infective angioma, so-called, which Hutchinson had described.

Dr. Rothwell said he thought it was a case of lupus erythematosus hemorrhagica. There was considerable infiltration, especially in the upper part, and it seemed as though in the larger lesions there was some atrophy and scaling, as well as patulous follicles. Then, posterior and inferior to the larger lesion, was a second lesion which more typically resembled lupus erythematosus, with a thinning in the center of a fairly discoid patch.

Dr. Chargin said that in his opinion it was, clinically, a case of lupus erythematosus. If there had been no hemorrhage in the lesions, every dermatologist would accept a diagnosis of lupus erythematosus. He pointed out that the lesions were located in the lupus erythematosus area, and the configuration of the patches was typical enough. The patches were hyperkeratotic in one part and atrophic in the other, and showed the typical patulous follicular openings. The woman's age was certainly not against lupus erythematosus; the unusual feature was the hemorrhage. While he had never seen a case of lupus erythematosus with hemorrhage, there was no reason why a hemorrhage might not occur as a result of trauma, or independently.

Dr. McCafferty had also seen the patient two weeks before at the Skin and Cancer Hospital. The lesion then was about the same size, hemorrhagic, with a shining surface. It was deep in the corium. The general impression at that time was that it was a dermatitis artefacta. When presented it had the appearance of lupus erythematosus hemorrhagica, as had been mentioned by Dr. Wise.

Dr. Walzer said lupus erythematosus was the only other diagnosis that was possible. In favor of it was: (1) presence of numerous patent follicular openings in the lesion; (2) adherent dry scales, and (3) atrophy. Against this diagnosis was: 1. The entire face was covered with patent follicular openings, some with comedones, and that therefore this was not a part of the lesion, but a result of a general comedo-acne of the entire face. 2. While adherent dry scales were present, the under surface of the scales did not show the prolongations into the patent follicular orifices, as is usual in lupus erythematosus. 3. Atrophy could also be present in angioma serpiginosum. 4. Development of the lesion spoke strongly against lupus erythematosus. The border of the plaque was composed of conglomerations of minute red puncta set close together. The disease spread by development of such minute puncta away from the lesion, which could be seen near part of the plaque.

Dr. Levin said that from a distance the condition impressed one as being dermatitis artefacta, as was suggested by Dr. Wise. However, on closer inspection one was impressed by its resemblance to lupus erythematosus because of

its color, the grayish-white firmly adherent scales, the dilated pilosebaceous follicles and the follicular hyperkeratotic plugs. On palpation a deep mass giving the impression of a paraffinoma was made out. He regarded the whole picture because of its superficial resemblance to lupus erythematosus and its deeper resemblance to paraffinoma as that of a hypodermic sarcoid of Darier-Roussy. A biopsy would be made to clear up the diagnosis.

DR. LAPOWSKI said that when the patient was examined in the clinic in daylight, no lesions of lupus erythematosus were seen. The first lesion was a tiny pinhead, hemorrhagic point, which combined gradually with other points, forming the patch. As for a dermatitis artefacta, the lesion appeared in tiny little points, which the patient could never produce. In his opinion, the condition was an angioma serpiginosum.

BEGINNING DISSEMINATED MACULAR ATROPHY OF THE SKIN. (Previously presented.) Presented by DR. WISE.

L. N., a negro woman, aged 30, born in the United States, married, a hairdresser, came to the Vanderbilt clinic on Oct. 13, 1923. She gave a history of having had an initial lesion three years before, but no secondary symptoms. Two and a half years before she had noticed a breaking out of lumps over the trunk following the use of medicine. These lumps never disappeared entirely, although at times they became flat. There were no subjective symptoms. There were present over the trunk, more numerous over the sides and back, many pea-sized and larger papules and nodules. The lesions were freely movable; some were atrophic, others elevated. The Wassermann test was four plus.

DISCUSSION

DR. LEVIN remarked that the history indicated the presence of hypertrophic lesions, and said that there were atrophic as well as hypertrophic lesions. In his opinion, there were no hypertrophic lesions, and even those lesions which were elevated above the surface were ballooned-up atrophic lesions.

DR. PAROUNAGIAN agreed with the diagnosis.

DR. HIGHMAN said he thought it was a case of macular atrophy in the intumescent stage, before the collapse of the lesions. Clinically, it was a classical case of macular atrophy, whatever might be the etiology.

DR. TRIMBLE agreed with the diagnosis; he thought it was a very unusual case.

DR. SCHEER said that two cases were reported in the literature in which atrophy of the skin had been cured, the atrophic lesions having disappeared without a trace of their existence. (Finger and Oppenheim: Die Hautatrophicen, 1910, p. 127.)

DR. LAPOWSKI asked how atrophy could disappear.

DR. SCHEER replied that he could not account for it, and that he was surprised when he read about it.

MACULAR ATROPHY IN A PATIENT WITH A POSITIVE WASSERMANN TEST. (Previously presented.) Presented by DR. WISE.

E. C., a negro woman, aged 26, married, born in the United States, came to the Vanderbilt clinic on Aug. 16, 1923, saying she had had the condition for five years. There was no history of a previous eruption at the site of the present

lesions. She presented disseminated lesions on the trunk and extremities, varying in size from ¼ to 1 inch. (6.3 mm. to 2.54 cm.). These were somewhat elevated, slightly pigmented, and appeared wrinkled with no palpable infiltration. The external surface of the right thigh presented a serpiginous lesion about 4 by 10 inches (10.16 cm. by 25.4 cm.) in diameter, more pigmented than the others. Physical examination revealed that the right pupil was larger than the left, although both reacted to light. There was moderate inguinal adenopathy. There were no lesions of the mucous membrane. The Wassermann test was four plus. Microscopic examination was made of a small raised lesion which had no wrinkling, and which, according to the patient, was a recent lesion. She was sure that there was no other type of lesion present before this one was noticed by her. There was edema throughout the entire cutis, most marked in its upper portion. There was some dilatation of vessels, swelling of the endothelial lining and edema of the vessel walls. There was no connective tissue proliferation either within or without the vessel walls. There was moderate dilatation of the perivascular lymph spaces, and they contained a few lymphocytes and occasional plasma cells. The elastic tissue throughout was apparently unaffected.

DISCUSSION

Dr. Levin said that he had studied the pathology of the lesions from two cases of macular atrophy about seven years before and he had found that these lesions were not infiltrations at any period during their development. They showed atrophy in their earliest stages, and changes could always be observed in the elastic tissue of the corium. These lesions did not develop subsequent to the infiltrations of the tertiary stage, but followed the papular lesions of the secondary stage of syphilis.

Dr. Wise asked whether Dr. Satenstein remembered the histologic points of a case he had studied in the City Hospital, one of the most characteristic cases of macular atrophy that had been presented.

Dr. Satenstein said the patient referred to had been under observation for four years, and that from twenty to thirty biopsies were made in all the different stages of the disease, from the so-called clinical tumefaction all the way to the atrophy. The girl had a positive Wassermann reaction, and had received more antisyphilitic treatment than any patient he had ever watched—mercury, arsphenamin and iodids, which had not influenced the lesion at all. She had continued to develop new lesions, which had gone through the clinical course of the patient just shown. In none of the lesions was there any evidence of syphilis. In the early stages extensive edema was found, without any infiltration, and no changes in the elastic tissue. Later, as the lesions began to involute, the elastic tissue became fragmentary and disappeared. A few years later the girl was seen again; she had serpiginous tertiary syphiloderm and other lesions, and she was turned over to Dr. Rosen for antisyphilitic treatment.

XERODERMA PIGMENTOSUM. Presented by Dr. Williams.

E. W., a white girl, aged 14, had a disease which began when the patient was about 2 years of age, following a severe sunburn. The condition had gradually spread from that time. The skin covering the face, neck, hands, forearms and arms was dry, covered with pigmented spots and slightly atrophic. On the face, particularly in the mid-region, there were several dark adherent crusts. The skin of the nose was atrophic, and showed a good deal of scar tissue. There was a moderate ectropion and a troublesome conjunctivitis.

There was a perforation of the right ala nasi, the edges consisting of scar tissue with no present ulceration. The skin of the trunk was somewhat dry and showed a few pigmented spots. There were two older children in the family, neither of whom was affected. The child was bright mentally and showed no stigma of degeneration.

DISCUSSION

DR. WILLIAMS said he would be very glad if the physicians at the Vanderbilt clinic would give him some information as to what treatment the child had received while under their care. He understood that she had had a good deal of roentgen-ray treatment, and he would like to know the amount as a guide in the further care of the patient.

DR. LAPOWSKI said it would be interesting to know how much effect the roentgen-ray treatment had on the developed ulcerations and on the pigmentary lesions.

DR. HIGHMAN said he did not know radium could be used for xeroderma. He could not speak from experience, but if there was anything in the point of view of Dr. Sinclair Tousey in connection with roentgen-ray keratoses, it would appear that radium might be useful in the treatment of xeroderma, although he himself would not be inclined to try either except for the individual epitheliomas.

DR. CLARK expressed the view that radium was a beneficial agent in the keratotic lesions and in the degenerative lesions of xeroderma pigmentosa. A patient at the Skin and Cancer Hospital had been treated with radium, and the lesions had cleared up and remained clear. Every one knew of lesions that had cleared up under radium in the hands of roentgen-ray workers. An interesting point was that the radium applications that were made were very much smaller than one would use for frank carcinoma. A mild erythema dose of radium was effective in these keratotic lesions and was a satisfactory agent in removing the local lesions in xeroderma pigmentosum.

DR. HIGHMAN agreed with Dr. Clark on the question of treating individual malignant lesions, but treatment with neither radium nor roentgen ray could possibly be of benefit in xeroderma pigmentosum, in the broad sense. In fact, the process would probably be hastened.

DR. MCCAFFERTY said he had seen the patient six or eight months ago; she had been referred to him by an oculist. He had given her seven or eight radium treatments with a 10 mg. plaque filtered through 1 mm. of aluminum for one hour. He could not say definitely whether the lesions he had treated had disappeared or not, inasmuch as there were so many lesions present. Some of the physicians who had seen her before believed she had improved. It was difficult to know how much treatment she had received, as she went from clinic to clinic.

DR. WILLIAMS said that the case was typical, and he had presented it as an example of a rather rare disease. The only peculiar feature about it was the perforation of the ali nasi. He had presented the patient to obtain the history which had been brought out in the discussion, and to get advice as to treatment. He had no idea that the roentgen ray had produced the lesion, but he wanted to get some idea of what had been done so that she would not receive an overdosage in the future.

CHANCRE OF THE LIP. Presented by Drs. Parounagian and Mason.

J. P., a man, aged 24, born in the United States, single, a letter carrier, had a lesion situated on the lower lip, and the duration, according to the patient's statement, was four weeks. He made his first visit to the Bellevue clinic on November 7, with the history of a barber accidentally cutting him with a razor while shaving; the sore on the lip was the result. The submaxillary glands on the left side were moderately swollen. The dark-field examination on Nov. 7, 1923, was positive for *Spirochaeta pallida*. A Wassermann specimen was taken, but a report had not yet been made. The patient had pronounced roseola, and also an evident Herxheimer reaction.

DISCUSSION

Dr. Williams said he had seen the patient at the Skin and Cancer Hospital on the previous day, and the change in thirty-six hours was remarkable. It was a clear and evident chancre, and the man had enlarged glands under the jaw; but the swelling was not nearly as great as at the present time. On the previous day the man had had a faint, beginning roseola. The diagnosis was made at once, and the man was referred to the syphilitic department; but he went instead to Dr. Parounagian.

Dr. Highman disagreed with Dr. Wise in what he had said about the Herxheimer reaction. He had been in Europe when the Herxheimer reaction was first discussed, and it was noted then that it might appear within a few minutes or after six to ten hour intervals. The eruption on this patient was vivid, but Dr. Highman did not know of any dermatitis due to arsenic or arsphenamin which occurred within a few hours after administration of the drug.

Dr. Gilmour had asked the man about the rash. He had received a dose of arsphenamin in the afternoon and the rash was not there, but after the injection the rash came out. Probably the erythematous rash was the result of the treatment.

Dr. Lapowski inquired whether treatment was advisable in such cases. If a rash appeared within from eight to ten hours after treatment, should the patient continue taking the arsphenamin?

Dr. Abramowitz said that the Jarisch-Herxheimer reaction consisted in the exaggeration of the pathologic processes following the administration of any antisyphilitic remedy, but was more marked after arsphenamin. When such a reaction occurred on the skin, the existing lesions took on a brighter color and usually some swelling. This patient in the active secondary stage of the disease had received as his first treatment a dose of arsphenamin that afternoon; a few hours later he vomited and the rash on his face and trunk became more marked. If this was not a Herxheimer reaction, such symptoms would appear after several injections of arsphenamin, and the rash would occur in previously normal skin only. Dr. Abramowitz cautioned against the immediate use of arsphenamin in such cases and advised one or two preliminary injections of mercury in order to avoid these Herxheimer reactions.

Dr. Wise was of the opinion that the eruption on the chest was an arsenical dermatitis.

Dr. Rosen agreed with the previous speakers that the cutaneous erythema was a Herxheimer reaction. He believed that this could have been avoided if the patient had received one or two mercurial injections before the administration

of arsphenamin. Arsenical eruptions were rarely seen three or four hours after injection; they usually made their appearance twenty-four hours, or three or four days, after the treatment.

Dr. Clark said that he had seen the patient the day before, and the change was remarkable. The chancre had become much larger. The interesting feature was something that had been impressed on him while treating a relative who had a large papular secondary syphilid, an initial lesion; and he had had the great discomfort of seeing this relative go into a coma, and for some time it was a question whether he would recover. He was watched closely from the time of the administration of the arsphenamin, and some of the lesions swelled up almost like urticaria. He had a maculopapular eruption, and a Herxheimer reaction, and his meninges were involved as well as his skin. Now he would never dare to give arsphenamin to a patient who had a papular element in the secondary eruption until the patient had received at least two injections of mercury.

Dr. Highman said that the discussion led to the question of the interpretation of objective signs. He had seen macular syphilis which almost suggested measles or scarlet fever. He had also seen instances of the Herxheimer reaction in which the lesions were so small that they had not been visible prior to the administration of an antisyphilitic drug. In other words, the lesions could be accounted for in the same way as in the case under discussion. To emphasize the rôle of arsphenamin or any of the arsenicals as alone responsible was historically false; mercury could do the same thing. It was a matter of the extent to which the spirochetes were affected by the chemical. He did not know how the symptoms that Dr. Clark described could be effected by the treatment he mentioned. Perhaps it might be judicious to pursue the course mentioned by Dr. Clark, but it would not entirely eradicate the danger. Dr. Highman said he had never seen any danger result from the Herxheimer reaction unless the physician became too frightened to continue proper treatment.

Dr. Levin said that it was important to decide whether the eruption was due to a Herxheimer reaction or to the result of administration of arsenic. If it was due to a Herxheimer reaction, the patient should receive further treatment; but if it were the result of arsenic, arsphenamin should not be given. The history suggested that of a Herxheimer reaction, but if one were to observe the lesions without knowing anything of the patient's history, one would regard the condition as a severe toxic erythema because of its limited distribution and its color, and not as a macular eruption of the secondary stage of syphilis. Dr. Levin agreed with Dr. Wise that the eruption was a dermatitis medicamentosa resulting from arsenic and not an intensified macular eruption. He feared that if more arsphenamin were given the patient, there would be danger of a hemorrhagic encephalitis.

Dr. Lapowski said that the patient was in the stage of syphilis when a macular eruption must appear. The intravenous injection might produce an exacerbation of the present macular eruption, which could not be distinguished from an anaphylactic erythema. For the patient, the point was important whether arsphenamin was to be administered or not. In such cases it was safer to continue with mercury. In the prearsphenamin era, so many exacerbations of the lesions were not seen, even when mercury chlorid was given intravenously.

Dr. Chargin said he thought that the eruption was a Herxheimer reaction and not an arsenical rash. It was well known that the Herxheimer reaction

appeared within twenty-four hours following the ingestion of arsphenamin. Those who had occasion to follow early active syphilitic patients in the hospital wards knew that the Herxheimer reaction frequently appeared within from six to eight hours, and that the eruption might be as marked as in this case. Dr. Chargin repeated that in his opinion this was a Herxheimer reaction; that is, an exaggeration of an already existing syphilitic eruption. A further point to strengthen the opinion that this was a Herxheimer reaction was the fact that arsphenamin eruptions usually occurred after later injections of the drug, and not after the first one. It was the opinion of the speaker that in a case of syphilis with a marked secondary rash, macular or papular, it was not wise to begin treatment with arsphenamin, for the Herxheimer reaction might be severe enough to injure the patient. In the case under discussion he would hesitate to treat the patient before giving him a rest, using mercury before again resorting to arsphenamin; but he would not hesitate to administer arsphenamin for fear of an arsenical rash.

Dr. McCafferty said he thought it was a case of dermatitis medicamentosa or a prolonged nitroid crisis. He told of a patient to whom he had given an injection of bismuth; two days later when the patient returned he was quite ill and presented macular lesions which were not present when first seen. This he thought was a Jarisch-Herxheimer reaction. The eruption of the patient presented in no way impressed Dr. McCafferty as being a Jarisch-Herxheimer reaction.

Dr. Highman asked whether he was correct in understanding Dr. Lapowski to say that such eruptions had not occurred before arsphenamin was discovered.

Dr. Lapowski replied in the affirmative.

Dr. Highman said that Herxheimer had described the reaction named after him either late in 1908 or early in 1909; that he produced it with mercury, and that all of this antedated the use of arsphenamin by upward of two years.

Dr. Parounagian, replying to Dr. Lapowski's inquiry as to whether or not they would continue to treat the patient, said that the patient did have roseola when first seen the day before presentation, and he was examined again the afternoon before the treatment was given when roseola was present. Dr. Parounagian did not regard the exaggerated eruption as arsphenamin dermatitis, but a Herxheimer reaction, as in his opinion arsphenamin dermatitis could not develop four hours after the administration of arsphenamin; furthermore, not after the first injection, as it rarely ever developed before the second or third injection. As regards the patient having a reaction like rise in temperature, nausea, etc., would know that in these fully developed, untreated cases we always did have some reaction with the old arsphenamin, in spite of the best technic. He saw no cause for alarm, and he would continue the treatment with arsphenamin if the kidneys functioned properly and the skin lesions subsided. On the other hand, if albumin was present and signs of arsenical dermatitis developed, it was obvious that treatment should be discontinued promptly.

ALOPECIA SYPHILITICA WITH EXTENSIVE ROSEOLA, LEUKODERMA SYPHILITICA AND CONDYLOMA ANI. Presented by Drs. Parounagian and Mason.

R. D., a man, aged 38, single, an Italian, was admitted to the Bellevue Clinic on Nov. 5, 1923, with a history of a genital chancre about six months previously, the scar of which was perceptible. According to the patient's

statement, no treatment had been given for his infection. Examination revealed an extensive alopecia of syphilitic nature, accompanied by a marked roseola, pigmentary syphilid of the sides of the neck, and condyloma about the anal regions. The patient was presented on account of the marked roseola present, with the extensive alopecia. The question was, was this a delayed eruption? If so, could alopecia precede roseola, or could the primary eruption remain so long and be so marked as the case in question, as it was well known that syphilitic alopecia usually occurs at the fading stage or later.

DISCUSSION

Dr. Chargin said he had seen two or three cases of recurrent macular eruption in patients suffering from early syphilis, the recurrent eruption appearing several months after the primary macular rash. He thought it was due to insufficient treatment, and remarked that these cases were quite uncommon.

PHENOLPHTHALEIN ERUPTION. Presented by Dr. Chargin.

V. D., a man, aged 39, married, a shoemaker, was under treatment for syphilis which was of thirteen years' duration, receiving courses of arsphenamin and mercury. He had suffered from constipation for years, and had been in the habit of taking various remedies for its relief. About five weeks before, after taking "Partola," he suddenly developed several erythematous patches on the abdomen, the largest circumscribing the umbilicus, the two smaller lesions being in the surrounding area. The erythema faded rapidly, leaving the typical pigmentation so commonly observed following phenolphthalein, which now at the end of five weeks was almost as marked as at the beginning. Interesting was the fact that repeating the drug (Partola) did not light up the old lesions, nor did new ones appear. Neither did arsphenamin, which he had received several times since the eruption first appeared, have any influence on the eruption. The case was shown because: 1. The condition was a phenolphthalein eruption. 2. Readministration of the drug failed to relight the old lesions, nor did it bring out new ones. 3. Arsphenamin, which might produce identical lesions, did not show the slightest effect either in lighting up the old lesions or in bringing out new ones.

DISCUSSION

Dr. Chargin said that an interesting observation in connection with this type of eruption was their recent experience with a patient whom they presented before this Society about two years ago, with a fixed eruption following arsphenamin. This patient recently returned to the clinic after an absence of about two years. He stated that in the interval he had been free from any skin eruption. In order to test whether he was still susceptible to the fixed type of eruption, arsphenamin was administered, with the result that he developed an eruption identical in all respects to that of two years before, proving definitely that arsphenamin, as well as some other drugs, was capable of causing this fixed pigmented type of eruption.

Dr. Abramowitz said that patients did not always show intolerance to a drug when given a test dose. They sometimes developed a refractoriness which was only temporary, and if the drug was given at some later date the eruptive phenomena would appear.

KAPOSI'S SARCOMA. Presented by Dr. Lapowski.

J. M., a man, aged 24, single, a chauffeur, said that his present trouble began two years previously as small "pimples" on the outer side of the foot and spread to the back of the ankle. Those on the ankle had been removed in Europe five months before, but had recurred. The condition had been spreading gradually. When first seen on Sept. 18, 1923, about seven weeks ago, he showed: (1) on the left foot, outer surface, one group of about eight violaceous, smooth, soft, elevated, sharply outlined tumors; (2) on the left ankle, posteriorly, three pea-sized, elevated tumors, somewhat harder than those above. The lower two were covered with dry, adherent, thick black crusts, which on removal showed a violaceous tumor. Surrounding these three tumors were numerous pinhead sized, or a trifle larger, similar growths. (3) On the left foot, on the inner surface, there were a few pea-sized tumors similar in character. From September 18 until October 30 the patient received four injections of neoarsphenamin at two weeks intervals, and potassium iodid internally. At present few of the lesions described above remained, and those that remained were greatly diminished in size. He also showed pigmented scars as remains of previous lesions. The physical examination was negative. The diagnosis was multiple nonpigmented sarcoma.

DISCUSSION

Dr. Wise said he thought it was sarcoma of Kaposi.

Dr. Walzer said that when the patient was first seen he had from fifteen to twenty of such lesions. He had received four intravenous injections of neoarsphenamin at two week intervals, and he was shown for the remarkable improvement under this treatment. Nearly all of the tumors had practically disappeared, leaving scars; only one tumor remained, and that one had greatly diminished in size.

A CASE FOR DIAGNOSIS. Presented by Dr. Lapowski.

D. S., a school boy, aged 15, in whose family history there was no tuberculosis or any other disease had never been sick until about September, 1922, a year before, when he had had an attack of influenza which had lasted about ten days. Following this the present lesions started as scattered boils, which broke down, became crusted and dried, leaving a scar. This lasted until May, 1923, about eight months. The condition was accompanied by night sweats. About this time (five months ago) he received six injections of autogenous and six injections of stock vaccines in the upper right arm by some private physicians. The patient claimed that immediately following these injections the number of boils increased. He had lost 20 pounds (9 kg.) since. He was first seen last September, one year after the onset, when he appeared thus: On the face, neck, shoulders, arms, forearms, chest and back the process started with pea sized red lesions of folliculitis; on the neck and upper chin the hard center of the lesions in five to ten days developed a purulent point, while on the forearms, chest and back several would develop on a penny sized, erythematous, slightly infiltrated area. Pus oozed out and dried to form a crust, which fell off, leaving a red granular surface which healed with scar formation first pigmented and later white. At the center of the forehead was one cystlike formation, soft, the skin covering it being red; no follicular opening was seen. The lesions were dressed daily with mercury and sulphur, and iodid of potassium was given internally. On October 23 (two weeks ago) he

received one injection of neo-arsphenamin. At present the face, neck and chest (front and back) were covered with scars from the size of a millet seed to that of a half dollar, some red, others white (depending on age), some covered with crusts, some (especially the smaller ones) were deep but paler, others were brownish, pigmented or hemorrhagic. The scars formed different configurations—annular, kidney and serpiginous shapes. On the forehead, chin and neck were a few cystic abscesses. The boy had not lost any weight for the last two weeks. He felt well and slept well. Physical examination revealed nothing.

DISCUSSION

DR. SHEER suggested the diagnosis of acne cachecticorum.

DR. CHARGIN suggested the diagnosis of acne conglobata, a severe type of acne in a person of lowered resistance, but he thought that this condition had nothing to do with tuberculosis. In acne conglobata one always found comedones associated with the follicular lesions; whereas in those considered of tuberculous origin (the so-called acne cachecticorum) comedones were not found. This patient exhibited a great many comedones on the face, back and chest.

DR. HIGHMAN said he did not think the condition looked like acne, but was simply scarring from abscesses, whatever the cause. He agreed with Dr. Chargin that acne cachecticorum was not necessarily tuberculous, but did not agree that the presence of comedones excluded acne cachecticorum, for a person with comedones might also have tuberculosis. It seemed foolish to exaggerate the presence or absence of comedones, if for no other reason, because so many people had comedones, irrespective of what other diseases they had. In his opinion, this was the result of abscesses which had left deep scars and nothing more, and speculation would add nothing to enlightenment.

DR. LAPOWSKI said each lesion began as a soft papule, gradually a purulent point appeared, the papule changed into an abscess, the destruction of the papule took place, and a scar was left. He would rather call it follicular abscess in the skin than an acne. That the vaccination had something to do with the condition was seen from the fact that the lesions developed in such large numbers after the injection; it was impossible not to come to that conclusion. Under arsphenamin treatment the lesions had disappeared, and the patient was gaining weight.

DR. PAROUNAGIAN said he had seen a similar case some years ago at Gouverneur Hospital. The patient had had no vaccine injections, yet he presented the same kind of cutaneous lesions. His opinion was that they were of tuberculous nature.

DR. LEVIN said that he had seen several cases of the type presented by Dr. Lapowski. He had always regarded these patients as persons with a tendency to have acne, who had a poor constitutional condition and a lowered resistance to infection. The condition is not directly related to tuberculosis, but may occur in any person whose general tone is lowered by general conditions, such as anemia, chronic constipation and chronic infections like tuberculosis. As for the administration of arsphenamin, improvement which might follow would depend on the stimulating effect of the arsenic on the skin. If one gave tuberculin, small doses would have to be given, and the results would be due to a nonspecific foreign protein.

DR. LAPOWSKI said that the cases mentioned by Dr. Levin belonged to the group of cases of subcutaneous abscesses with acne. These subcutaneous

cystic abscesses never undergo such necrotic changes and do not leave such scars as those in these patches.

Dr. Trimble said that this was the third case of the kind that he had seen —the one he reported some years ago he considered a necrotic tuberculid. The condition seemed to be fundamentally tuberculous. He would class the case as one of necrotic granuloma, only the lesions were more extensive and larger than in most cases of this kind.

A CASE FOR DIAGNOSIS. Presented by Dr. Lapowski.

L. P., a man, aged 40, married, who had no children, first seen in December, 1920, at which time he had the following lesions: 1. The proximal half of the penis showed vitiligo of about five to six years' duration, with pinhead sized, shiny, slightly elevated, purplish-red papules, singly, in groups and in rings. These papules were covered with fine scales. The anus also showed vitiligo. 2. On the inner side of both cheeks were fine whitish papules, arranged in lines. 3. On the scalp were scattered quarter dollar sized patches with adherent whitish scales, but not as shiny as in psoriasis. On removing the scales the skin appeared reddish underneath, dry in some places and oozing in others. 4. On the right parieto-occipital region the hair was white, covering a penny sized adherent atrophic deep spot. A few months later nail changes developed, while the papular lesions on the penis cleared up and the vitiligo extended. The man had been receiving injections of mercuric chlorid during 1921, 1922, and up to August, 1923—about twenty-five injections. The Wassermann test made at that time was negative. As presented, he showed the following lesions: 1. On the scalp were scattered one cent sized patches, somewhat infiltrated, covered with gray to silvery adherent scales. Under the scales the scalp was dry and red, with pronounced follicular openings. There were no single lesions along the border of the patches. Over the right parietal occipital region was one one cent sized atrophic spot, with patulous follicular openings covered with a bundle of whitish hair. 2. The penis, anus and upper right thigh showed vitiligo. On the scrotum was a one cent sized patch, composed of flat, shiny, lichen-like papules, covered with fine scales. 3. On the right leg was a one cent sized patch of red, millet seed sized papules, arranged in lines, lichen-like, and covered with fine whitish scales. On the center of the left leg was one millet seed sized papule, covered with a whitish scale which on removal showed punctate hemorrhage. 4. On the inner side of both cheeks were lines of whitish quadrangular flat papules, like the lichen planus of mucous membranes. 5. Almost all the nails of the hands and feet were affected. The inner corners or whole free border was involved. They were opaque and thickened, and like those seen in psoriasis. All the lesions were itchy.

DISCUSSION

Dr. Williams said the man had three conditions at least: leukoderma, visible on the prepuce and other parts of the body; folliculitis of the scalp leading to progressive scarring, seemingly a folliculitis decalvans; and he had also lesions in the mouth and on the scrotum which seemed to be lichen planus. The lesions on the inside of the cheek were white and sharply circumscribed, like those seen in lichen planus. The lesions on the penis seemed to be lichen planus, but had a scab which suggested psoriasis. The one on the leg seemed to be annular lichen planus, with healing and scarring in the

center. Dr. Williams said he had never seen a case of psoriasis with such fine hard nodules on the periphery as seen on this patient's leg. If that were the only lesion, it would suggest epithelioma. In his opinion, the man had leukoplakia, folliculitis decalvans and lichen planus.

Dr. Lapowski said that during the months the patient had been under observation he had seen distinct psoriatic lesions with all the classical characteristics of psoriasis; and, on the other hand, lichen planus lesions both on the body and glans penis, near the border of the vitiligo spots. The lesions of the mouth, although they now look like leukoplakia, presented during the time of observation minute pinhead white points, the color of lichen lesions, which later combined with the leukoplakia.

Dr. Williams replied that if Dr. Lapowski had seen typical lesions of psoriasis, the man must have had psoriasis; but at the present time he could see none. The lesions in the mouth were lichen planus. He would rule out the question of parapsoriasis.

Dr. Abramowitz said that the man had in addition a circumscribed eczematous patch around the anal opening, and inquired whether Dr. Lapowski had examined this and the scales under the nails for tinea.

Dr. Lapowski said he had seen cases with lesions of the mucous membranes of the mouth in patients with psoriasis, lesions which improved or even disappeared with the improvement or disappearance of the skin lesions.

Dr. Walzer said that the lesions on the scalp were not folliculitis decalvans as suggested by some of the men. The lesions on the scalp had been observed for three years, and they were exactly the same as they were when they were first seen.

Dr. Rosen said he thought the case was one of lichen planus with involvement of the scalp. He had recently seen a patient in private practice with typical lichen planus lesions of the trunk and extremities in whose scalp there were about half a dozen typical lichen planus papules.

MAJOCCHI'S DISEASE. Presented by Dr. Wise.

This case was presented at the New York Dermatological Society.

DISCUSSION

Dr. Lapowski said that he did not know of any case of Majocchi's disease disappearing in such a short time. The patient, in his opinion, had a hemorrhagic purpura; the lesions disappeared and reappeared during the few months of observation. The purpura could be produced artificially by exerting pressure on the arm, showing the fragility of the capillaries.

Dr. Levin said that if this had been a frank case of purpura hemorrhagica since the time that the boy was 3 years of age, one would expect him to be dead, while other laboratory and clinical findings bearing on this condition would have been found. The duration, the history of recurrences, the hemorrhages, the atrophy, the telangiectasia and some annular lesions made a diagnosis of Majocchi's disease clinically positive.

Dr. Walzer said that this patient had been under observation at the Good Samataritan Dispensary for a long time, and that Majocchi's disease had been considered as a possible diagnosis. The patient was examined from all points of view; complete physical and blood examinations were made, even to the

fragility of the capillaries. Roentgenograms of the chest also were made, which showed enlarged glands at the hilus. The conclusion then made was not that the condition was Majocchi's disease, but chronic purpura due to capillary fragility.

DR. WISE said that it was the unanimous opinion of the members of the New York Dermatological Society that this was a case of Majocchi's disease. It was a well-known fact that Majocchi's disease did appear and disappear in certain limited periods of time; that, however, was not an important factor. There were evidences of atrophy in the skin if carefully examined in daylight, which was strongly against the diagnosis of any kind of purpura. In his opinion, further study would show beyond doubt that it was a case of Majocchi's disease and nothing else.

GRANULOMA ANNULARE. Presented by DR. SCHEER.

R. G., a woman, aged 48, married, born in Russia, came to the Vanderbilt Clinic on June 12, 1923, for treatment of an eruption on the hands which had been present for six months. On the dorsal surface of the hands were several five cent sized patches with a ringlike border and clear center. Tincture of iodin had been painted on the lesions before the patient came to the clinic.

RECKLINGHAUSEN'S DISEASE. Presented by DR. CHARGIN.

E. P., a widow, aged 39, a housewife, born in Norway, who had been in this country for nine years, had a skin affection that had existed since early childhood, at which time were noted small tumor masses and pigmentation. These increased in number and size so that at this time she presented (*a*) many tumors varying in size from that of a pea to that of a plum, (*b*) numerous pigmented areas of varying sizes, (*c*) typical blue spots, of which there were many scattered all over the body, particularly on the chest. The typical hernia of the skin was observed over many of the tumor masses, as well as over many of the blue spots. The woman's mentality was apparently normal. The mucous membranes were apparently normal.

GRANULOMA ANNULARE. Presented by DR. ABRAMOWITZ.

H. McM., a girl, aged 2½, was born in this country of American parents. She was presented at the last meeting of the Academy by Dr. Rosen as having a case of granuloma annulare. She was now shown again after she had been treated with the Kromayer light, with the annular lesions still visible but the infiltration considerably reduced. The Wassermann test was negative.

GRANULOMA VENEREUM. Presented by DR. ABRAMOWITZ.

W. S., aged 39, a negro longshoreman, born in South Carolina, had a lesion on his penis that began eight months before with an urethral discharge, and was followed by a fissure at the frenum. The prepuce then gradually enlarged and became ulcerated. A dorsal split became necessary on account of a severe phimosis. Dr. Wren, of the genito-urinary department, did this, and referred the man to them for diagnosis of the penile lesion. This was a month ago, and he then presented a yellowish red verrucous and granulated ulceration of the prepuce. The lesion was the size of a lemon, with the distal end of the penis enlarged to three times its normal size. There was no glan-

dular enlargement, and all tests were negative for *Spirochaeta pallida*, and the Unna-Ducrey bacillus, as was the Wassermann test. Organisms closely resembling Donovan's inclusion bodies were recovered from smears from the ulcerated lesion. He had received twelve injections of tatar emetic, with great improvement.

CUTIS VERTICES GYRATA. Presented by DR. LAPOWSKI.

I. G., a man, aged 32, single, was first seen June 27, 1923. The whole scalp, especially from the occipital to the parietofrontal part, was covered with deep furrows, running in the transverse direction in the occipital region and the longitudinal direction in the parietal region. The skin between the furrows was edematous, spongy and soft. The hair was normal, and the rest of the body was normal.

DETROIT DERMATOLOGICAL SOCIETY

Regular Meeting, Nov. 20, 1923

R. C. JAMIESON, M.D., *Presiding*

ONYCHOMYCOSIS. Presented by DR. VARNEY.

A. S., a man, aged 25, American born, in excellent general health, had first noticed a vesicular eruption between the toes three years previously. The soles and medial surfaces of the feet were subsequently involved, and the toe nails developed a dry, fissured, moth-eaten appearance. About one year previously he had noticed similar alterations of the nails of the right hand, and for the previous six months he had been troubled with a sharply defined vesicular eruption of the genitocrural regions, extending onto the abdomen. There had also appeared a circinate patch on the flexor surface of the right arm. Organisms of the trichophyton group were found microscopically in all the areas involved. Under treatment all except the nail lesions were rapidly disappearing.

DISCUSSION

DR. VARNEY said that in this case it was likely that the infection had been transferred from the feet to the finger nails when the patient had repeatedly scratched the lesions.

DR. WOLLENBERG said that he had at that time under his care a patient with favus affecting both the scalp and the finger nails.

CAMPHORATED OIL TUMORS? Presented by DR. VARNEY.

F. C., a native of Greece, a man, aged 20 years, about eighteen months previously had first noticed several sharply defined firm subcutaneous nodules of the arm and shoulder, at sites where he had received repeated medicinal hypodermic injections after undergoing an appendectomy in 1918.

DISCUSSION

DR. PARKHURST agreed with the diagnosis and suggested as a therapeutic measure the monthly administration of a maximum suberythema dose of roentgen rays filtered through from 1 to 3 mm. of aluminum.

DR. JAMIESON said that he had used this treatment in a patient with six small paraffinomas of the face, and that the tumors had disappeared within six months.

DERMATITIS SEBORRHEICA. Presented by DR. PERKINS.

Miss L. C., aged 18 years, with a history of infantile eczema, had first noticed the appearance of a brownish scaling eruption on the face, neck and arms in 1919. This eruption had recurred frequently, the outbreaks being more severe during the summer months. These same areas were involved at the time of presentation, there being a distinct follicular element, and there was dry seborrhea of the scalp. All the usual therapeutic measures having been tried in vain, the case was presented for suggestions as to further treatment.

DISCUSSION

DR. VARNEY said that he agreed with the diagnosis, including secondary lichenification. He felt that there might be an element of protein sensitization in this case, and asked whether there had been any anaphylactic symptoms, such as asthma or hay-fever.

DR. PERKINS said that the condition of the teeth might have some bearing on the case, and that roentgen ray studies were being made, although thus far nothing had been found.

LICHEN PLANUS HYPERTROPHICUS. Presented by DR. SCHILLER.

Mrs. A. C., aged 37, born in Malta, presented a rough thickened lichenified patch, about 8 inches (20.32 cm.) long and 4 inches (10.16 cm.) wide, on the inner side of the left thigh. It had been present for seven years, with intense itching. Quadrangular papules could be discerned.

DISCUSSION

DR. WOLLENBERG said that he considered this a case of chronic eczema with lichenification.

DR. VARNEY said that it had the characteristics of lichen planus hypertrophicus.

PITYRIASIS ROSEA. Presented by DR. SCHILLER.

L. M., a Jewish boy, aged 13, presented a rose-colored and yellowish eruption of macules with clearing centers, of several weeks' duration, with a history of having had a herald patch on the back of the neck. This case was shown to stimulate discussion regarding the treatment of the condition.

DISCUSSION

DR. SCHILLER said that in ten of his recent cases the lesions had cleared up quickly after blistering with the air-cooled quartz lamp.

DERMATOPHYTOSIS AND PSORIASIS. Presented by DR. VAN RHEE.

P. D., aged 50, American by birth, a laborer, presented sharply defined, brownish, slightly scaling patches in the axillae and groins and on both buttocks, elbows, knees and the pubis. Some of the patches showed considerable exaggeration of the skin markings. There were papules on the scalp. The diagnosis had been verified by microscopic examination of scrapings from lesions in the groins and axillae.

DISCUSSION

DR. VARNEY agreed with the diagnosis, and pointed out the presence of psoriatic lesions of the scalp.

A CASE FOR DIAGNOSIS. Presented by DR. VAN RHEE.

M. L., a negress, aged 23, presented sharply defined erythematous patches on the flexor surfaces of both wrists and in both genitocrural regions, with some scaling and serous exudation from the lesions on the wrists. A tentative diagnosis of dermatophytosis had been made.

DISCUSSION

DR. VARNEY agreed with the diagnosis of dermatophytosis.

DR. PARKHHURST said that clinically this diagnosis seemed the most likely, and suggested that microscopic and cultural examinations be made.

SEASONAL PRURIGO MITIS. Presented by DR. SCHILLER.

E. S., a Jewish boy, aged 9, presented, especially on the hands and feet, a scattered eruption of small pale papules, some of which were excoriated and crusted, interspersed with scars which were said to mark the sites of former lesions. There were no urticarial tendencies. For four years this eruption, accompanied by intense itching, had recurred in the late summer and early autumn, and various forms of treatment had been of no benefit.

DERMATITIS EXFOLIATIVA. Presented by DR. VAN RHEE.

J. L., a man, aged 44, an Italian laborer, presented a generalized exfoliative dermatitis of one year's duration. Its mode of onset could not be ascertained. The leukocytes numbered 22,300—71 per cent. were polymorphonuclears and the balance lymphocytes. There were no signs of syphilis, clinically or serologically.

DISCUSSION

DR. VARNEY asked whether the patient's temperature was subnormal.

DR. VAN RHEE replied that it was not.

LYMPHANGIOMA-ENDOTHELIOMA. Presented by DR. JAMIESON.

A man, aged 32, with tumors of the scalp over the right temple, had been previously presented before the American Dermatological Association at Ann Arbor (ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY **8**:877 [Dec.] 1923), and was presented again to show the effect of three maximum suberythema filtered roentgen-ray treatments. The size of the nodules had diminished considerably.

A CASE FOR DIAGNOSIS. Presented by Dr. Van Rhee.

D. B., a Roumanian, aged *32*, a laborer, presented extensive and painful ulcerations inside the left cheek and on the mucous surface of the lower lip. He had first noticed it fifteen months previously, there being no history of preceding injury. The examination of smears had been negative. (A subsequent biopsy examination, reported in December, has shown the ulcer to be tuberculous.)

DISCUSSION

Dr. Doty asked whether there was any elevation of temperature, and Dr. Van Rhee replied that thus far none had been observed.

Dr. Wollenberg said that he favored a diagnosis of orificial tuberculosis, although there was a possibility that it might be sarcomatous or blastomycotic. He felt that this case would bear careful investigation .

Dr. Parkhurst agreed with the diagnosis of tuberculosis orificialis, and said that it would seem unusual for blastomycosis to be so sharply limited to the mucous surfaces and that the absence of palpable lymphadenopathy and the favorable appearance of the patient after fifteen months argued against the possibility of malignancy.

Regular Meeting, Dec. 18, 1923

R. C. Jamieson, M.D., *Presiding*

DERMATOSIS INDUSTRIALIS (?); LEUKODERMA. Presented by Dr. Schiller.

Mrs. E. P., aged *37*, of English birth, presented a dry, scaling eruption of the left palm, with some vesicle formation, intensely pruritic. For several years depigmented areas had been appearing and enlarging on the trunk, arms and hands.

DISCUSSION

Dr. Varney suggested that the periodic administration of arsenic for two or three weeks about four times a year might be of some value in combating the leukoderma. He had tried it and wished that others might do so and report.

Dr. Parkhurst said that there was also hyperkeratosis of the right palm, making the involvement bilateral rather than unilateral. Laundry soap might be the cause.

DERMATOPHYTOSIS (?). Presented by Dr. Jamieson.

Miss B., aged *32*, a stenographer, had noticed the appearance of a small faintly erythematous papule on the flexor surface of the right forearm three weeks previously. Slightly pruritic, it gradually enlarged to the size of a dime, with scaling and moderate redness. Since that time, sparsely scattered lesions of similar type and development had appeared on the arms, trunk, thighs, dorsa of the hands and on the neck and face. Scrapings from the lesions had just been taken for microscopic and cultural examination, but the findings had not been reported.

DISCUSSION

Drs. Varney and Bartholomew agreed that this was probably a case of dermatophytosis.

Dr. Parkhurst said that, according to the patient, at the time of onset there had been a small boy in the household with what was said to be ringworm of the scalp.

Dr. Schiller asked whether there had been any animals in the household prior to the time of infection, and Dr. Jamieson replied in the negative.

Dr. Bartholomew said that properly spaced roentgen ray exposures usually were followed by prompt relief in such cases.

PITYRIASIS ROSEA. Presented by Dr. Varney.

C. Van R., a dentist, aged 32, a Boer, was in good general health. A profuse eruption of pea to quarter sized fawn colored to erythematous scaly macules covered the trunk completely and the extremities almost entirely, 90 per cent. of the skin surface being involved. Although the eruption had been present for only six days, the lesions at the nape of the neck were distinctly lichenoid. The herald patch surrounded the left nipple. The case was presented because of the unusual extent and intensity of the eruption, its lichenoid appearance at the nape of the neck and the unusual location of the herald patch.

DISCUSSION

Dr. Parkhurst said that he had recently seen a case in which the involvement was even more extensive, the palms and soles having been affected.

GUMMA OF THE NOSE, THIGH AND LEG. Presented by Dr. Van Rhee.

Mrs. O. R., colored, aged 45, a housewife, presented mildly inflammatory papulopustular lesions on both sides of the nose, including the alae. There were many varioliform scars. There were also two punched-out ulcers about 2 cm. in diameter, one on the outer aspect of the right thigh and the other on the outer lower third of the right leg. The onset had occurred in August, 1923. There was a history of a possibly syphilitic eruption in 1920, and the Wassermann reaction was strongly positive.

DISCUSSION

Dr. Van Rhee said that there had been some improvement under mercurial medication. No arsphenamin had been administered.

Dr. Biddle said that clinically the lesions seemed to be syphilitic, but that the ulcer of the leg could be trophic in origin.

Dr. Parkhurst said that there were no lesions on the face which could be identified as syphilitic. There was a history of itching, and after the patient had scratched the lesions appeared, so that the possibility of neurotic excoriations was to be considered. The ulcer of the leg was not infiltrated, nor were there any nodules, and the surrounding skin was boggy and bluish, indicating that deep varicosities might have been causative.

Dr. Varney said that the lesions of the nose were probably tuberculous, and those of the lower extremity syphilitic.

A CASE FOR DIAGNOSIS. Presented by Dr. Troxell.

Q. M., a man, aged 23, a mulatto, gave a history of having had a skin eruption for the previous fifteen months. Groups of acutely inflamed lesions had appeared on the neck and the flexures of the arms and legs, and at one period there was serous exudation. These had gradually improved, leaving considerable pigmentation. Five months previously, follicular keratoses had begun to appear on the forearms, terminating in flat follicular papules. Itching was pronounced. There was also an eruption on the feet and the dorsa of the hands, which had been called dermatophytosis. The blood Wassermann reaction was negative.

DISCUSSION

Dr. Troxell called particular attention to the follicular papules of the arms and legs and the patches of neurodermite.

Dr. Varney asked whether the patient had taken any arsenic.

Dr. Troxell said that the patient had taken pills of an unknown composition, possibly mercury protiodid.

Dr. Varney said that in this case there was lichenification and the color of lichen planus, but that the follicular lesions were not those of lichen planus, nor was there any tendency to annular arrangement of the elements. The pigmentation brought up the possibility of acanthosis nigricans.

Dr. Parkhurst said that the elementary lesion was apparently a colorless pin-point follicular papule, there being some secondary lichenification. There were no lesions in the mouth. The lesions on the flexures of the wrists and the few scattered lesions on the prepuce reminded him of Trimble's recent case of lichen nitidus. He felt that a biopsy examination would be of interest.

ICHTHYOSIS. Presented by Dr. Schiller.

J. H., a Polish laborer, aged 29, gave a history of intermittent pruritus since birth; it had been constant during the previous six weeks. The entire skin surface was harsh, dry and scaly, representing a mild degree of ichthyosis.

A CASE FOR DIAGNOSIS. Presented by Dr. Jamieson.

J. J., a man, aged 25, in good general health, had first noticed the appearance of yellowish red pinhead sized maculopapules on the dorsa and sides of the feet, ankles and lower third of the legs, about one month previously. These lesions gradually became enlarged, some attaining a diameter of 1 cm.; they were circinate and became slightly furfuraceous. There were no subjective sensations, and there had been no tendency to spontaneous involution. Local remedies had had no effect on the lesions.

DISCUSSION

Dr. Biddle said that the eruption ended abruptly at the lower end of the drawers, which suggested that it might be due to irritation from the socks.

Dr. Jamieson said that the characteristics of the lesions had lead him to suspect that it might possibly be pityriasis rosea of atypical location.

Dr. Doty said that he had lately seen a similar case with lesions extending up to the knees, in which relief followed the extraction of five infected teeth.

DR. PARKHURST agreed with Dr. Biddle. The eruption had begun immediately after the patient had started to wear six new pairs of brown socks. Since he operated a traveling crane, the eruption was apparently not occupational.

DR. BIDDLE suggested that the eruption might be due to irritation from the soap in which the socks were washed, and suggested that this side of the question be investigated.

H. J. PARKHURST, Reporter.

MINNESOTA DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 5, 1923

H. G. IRVINE, M.D., *Presiding*

MELANODERMA. Presented by DR. FELDEN.

F. B. B., aged 59, married, a watchman in the Minnesota Linseed Oil & Paint Co., married, the father of two children—a boy aged 15 and a girl aged 28—had been in good health until his present trouble. He had had measles and whooping cough. He had had no serious illness or venereal infection. His present trouble began in April, 1923, with redness, formation of papules and weeping and crusting areas between the fingers, which later spread over the hands, arms, face, neck, groins and on the inside of the thighs. He came in contact with zinc, lead and oil, and he thought exposure to these substances was the cause of his skin trouble. He was treated at first with Burow's solution poultices, calamin lotion, and later with Alpine lamp exposure, 10 per cent. crude coal tar and the roentgen ray several times at intervals of one to two weeks, never more than one-third skin unit. Besides this external treatment, he took solution of potassium arsenite (Fowlers' solution) in May, in small dosages—from one drop increasing to ten drops only for about three to four weeks.

A general physical examination revealed moderate arteriosclerosis, healthy lungs, a normal blood picture, a negative Wassermann test, normal urine, which was also negative for arsenic, and blood pressure: systolic, 170; diastolic, 110. Cystoscopic examination showed a slightly enlarged median prostate lobe, no residual urine. The patient's discoloration started before taking the arsenic. It began after the application of crude coal tar. The pigmentation became worse until the beginning of August, after which it remanied the same. Treatment with 10 per cent. white mercury, bismuth ointment, or 4 per cent. phenol with 0.1 per cent. mercuric chlorid have not improved the discoloration. The posterior portion of the neck and flexor surfaces of both forearms show imperfectly outlined oval, lichenified areas with slightly thickened skin and some lenticular hemispherical papules. The skin of the whole body, especially over the cheek bones and lateral forehead areas is diffusely discolored, homogeneous, dark and negro-like. Only the mucous membranes and the lower extremities from the knees down are normal in color.

Diagnosis: Lichen simplex chronicus on the neck and forearms (Vidal); melanoderma.

DISCUSSION

DR. FELDEN said that the case which he presented as melanoderma was worthy of special attention as the exact cause of its origin is unknown. This patient's skin became discolored after a common dermatitis which had been

treated according to the usual rules for treatment of such cases. Dr. Felden said he first saw the patient the latter part of September, and he looked just as dark as he does now. The arsenic, which he was at first inclined to blame as the possible cause of the discoloration, he found had been given after and not before the development of the discoloration. Considering the pigmentary skin diseases, from the differential diagnostic point of view, there might be eliminated first the so-called associated dyschromias, or better, dyschromic dermatoses—that means all cases in which the pigmentation is only one of the symptoms of the underlying dermatosis among other alterations, for instance, the abnormal hue of the horny layer in psorospermosis follicularis vegetans, acanthosis nigricans, and some types of ichthyosis, and then pigmentations which appear occasionally in the course of lichen planus, in syphilitic lesions and in leprosy.

This case clearly belongs to the generalized melanodermas. We see such diffuse pigmentations, besides the arsenic melanodermas, in Addison's disease, in bronzed diabetes, in pellagra and, although of a less pronounced intensity, in cancer cachexia, pernicious anemia and more rarely in cases of tuberculous peritonitis, resulting here probably from the same conditions as in genuine Addison's disease—which is a disturbance of the sympatico-suprarenal system. The negative results of the general physical examination of this patient (normal blood pressure, no arsenic in the urine, etc.) prevent us from accepting any of these diagnoses.

Dr. Felden said that during the war and shortly after it he had had occasion to see in Germany and Belgium several cases of diffuse pigmentation, which have been described by Riehl as "war melanosis." It was supposed that the change of food, the deficiency in proteins and the resulting cachexia and altered metabolism were the cause of this diffuse pigmentation.

The patient was very unhappy about this discoloration and was anxious to be cured. Dr. Felden requested suggestions from the members of the society. In answer to a question by Dr. Stokes, he affirmed that no arsenic was found in the urine.

Dr. Michelson said that this case opened up that group of cases which included localized as well as generalized pigmentation of the skin. He believed that Addison's disease and bronzing due to diabetes could be ruled out in this case because of the negative general examination. Arsenical pigmentation was ruled out by the history and also by the lack of keratoses which one would expect to find in an arsenical pigmentation which was as severe as that in the case presented. There is another type of a melanosis which was described by Riehl, and which was prevalent in Germany and Austria during the war. Dr. Michelson had seen two moulages of cases in Vienna. They were characterized by a sepia brown pigmentation of the face, neck and often of the hairy scalp. There is no change in the skin itself. Occasionally the pigmentation spreads to other parts of the body, especially to points of irritation. Much work has been done to find the cause. The only common food that these people ingested was the war bread. Riehl had called attention to the work of Busk, who had obtained a fluorescing pigment from buckwheat, and to the work of Rabitschek who had sensitized white mice with alcoholic extracts of corn so that when they were protected from light they remained alive, but died when exposed to the light.

Riehl recalled these facts and explained the war melanosis on the ground of some toxic substance which had been introduced in the food. The war melanosis disappeared about two years after the population had returned to

the use of pure flour. Therefore Riehl concluded that this type of melanosis was due to some adulteration of the flour.

Dr. Irvine said that he saw a case a few years ago in a man in whom the disease started with pigmentation over the temples coming in small patches looking like freckles. These gradually formed confluent patches until his whole face was pigmented. This man was examined by several men and all findings were negative. That pigmentation remained for a year or so and then gradually disappeared.

ACUTE TOXICODERMA. Presented by Dr. Michelson.

A man, aged 20, a student, had acute erythema of the body. His face was somewhat edematous, and he complained that his entire skin seemed dry, harsh and felt as though it were going to crack. He had no angina, and there was no change in the color of the tongue. The temperature was normal. He had taken no drugs and, to his knowledge, had not come in contact with any external irritant. The diagnosis rested between scarlet fever, acute erythroderma and generalized toxicoderma. Scarlet fever was ruled out because of the lack of a rise in temperature and angina, and the subsequent course of the disease ruled out the acute erythroderma for the condition rapidly subsided without exfoliation.

DISCUSSION

Dr. Felden (by invitation) said he believed the term erythroderma should be reserved for cases in which the erythema has lasted for a certain length of time. This case had been observed for only a few hours. If the nomenclature is too complicated, cases of acute dermatitis which may last for only a few days and which may not be followed by any serious consequences, should be eliminated and this term should be applied to cases which have, according to Darier's definition of erythrodermas, lasted at least from six to eight days.

Dr. Michelson said that he saw this case for the first time this evening and therefore was unable to rule out acute erythroderma definitely. He thought Dr. Felden's point was well taken and that an acute erythema would have to continue for a certain length of time and go on to exfoliation before one could diagnose it as erythroderma.

A CASE FOR DIAGNOSIS. Presented by Dr. Shapiro.

S. D., a man, single, aged 43, a hotel night clerk, had pain and swelling in both feet, particularly in the toes, atrophy of the toe nails and tenderness and coldness in those regions. Almost the same condition existed in the fall of 1917 and cleared up after about six months of antisyphilitic treatment. He had had considerable pain in his feet and legs ever since and some swelling in his feet for the last four or five years. In 1920, both thumbs became infected with a similar infection. This cleared up under antisyphiltic treatment. During the winter of 1922 and 1923 he had had aches and pains about the head. In April, 1923, the immediate present illness began. After a few weeks one of his toes began to ulcerate. Since that time he had received vigorous antisyphilitic treatment almost continuously. Until two months before presentations there was little if any improvement, and he began to show intolerance for both mercury and neo-arsphenamin. After a short rest he was given silver-arsphenamin, 0.3 gm. a week in 5 c.c. of distilled water. Since then he had become considerably more comfortable. The pain and swelling had almost

entirely disappeared, although the feet were still tender. After the sixth treatment he had an attack closely resembling angina pectoris. The urine was negative throughout the treatment, and there were no physical signs of cardiac disturbance to account for the edema.

In 1911 he had a chancre that was not recognized until the roseola appeared.

The patient was a well-developed, well-nourished white man. Physical examination was essentially negative except that the left extremity showed cyanosis, coldness, slow return of the blood to the capillaries of the skin of both feet and ulceration of the second toe of the left foot.

DISCUSSION

Dr. Shapiro said that this man was a known syphilitic, and that was naturally supposed to be the cause of the ulceration. However, persistent treatment did not clear up the condition, and so that cause was ruled out on that ground. The man was observed and treated from the beginning.

Dr. Stokes said that the patient's history seemed to indicate that he had improved several times. His experience with these cases had been that they are due to syphilis and that gangrene is the end of the process. The vessels were gone. He would not rule out syphilis even if the patient did not get well under treatment. He suggested trying sodium iodid intravenously, as that had seemed to help some of their patients. He also suggested scraping the coats of the femoral arteries, if a surgeon would attempt it, which might give some relief for a while. This apparently affects the vasomotor apparatus in some way. It probably is not a curative treatment, however.

Dr. Irvine asked what local treatment had been used.

Dr. Shapiro answered that only ammoniated mercury had been used.

Dr. Klein said that heat and cold are effective in these cases. First hot and then cold water should be applied.

Dr. Shapiro said that the patient had received that treatment, and had received some comfort from it, but it had not healed the ulcerations.

Dr. Irvine asked for a subsequent report on this case.

PSORIASIS OF HANDS. Presented by Dr. Michelson for Dr. Sweitzer.

A woman, aged 50, had several patches of psoriasis, irregular in shape, with considerable thickening. The lesions resembled lichen planus to some extent. Typical psoriasis lesions were present on the elbows.

DISCUSSION

Dr. Irvine said that he saw the patient about eight or ten years ago with Dr. Sweitzer, and at his request he had used the roentgen ray on the plaque on the knee. As he recalled the case then, it was lichen chronicus simplex, and he did not recall any other lesions. The patient had had a thick chronic warty plaque, intense itching, and he had not responded promptly to the roentgen ray, although complete involution followed. Dr. Irvine said the lesions on the hands looked like psoriasis. He said he had had two or three cases with lesions on the palms that he thought no one could diagnose until one or two other spots of psoriasis appeared elsewhere which would give a clue to the diagnosis.

Dr. Michelson said that the patient told him she had been treated by Professor Majocchi in Italy, and he had treated her for psoriasis vulgaris.

Dr. Irvine said that some cases of psoriasis tend to hyperkeratosis. He saw one case last year in which the patient had a marked hyperkeratosis on the soles. A tentative diagnosis of epidermophyton was made and agreed to by others. He treated this patient with various salves, and six months or a year after she developed typical patches of psoriasis elsewhere on the body. Dr. Irvine said there was just one place on the thighs where he thought one would be justified in considering lichen planus.

Dr. Stokes said he thought good thorough scrapings should be taken from the hands and examined for fungus.

MORPHEA GUTTATA. Presented by Dr. Michelson.

Mrs. P., aged 61, was presented because of numerous small pearly white lesions scattered over the anterior and posterior chest wall. The patient said that these spots had developed insidiously during the past six years; that some of them had greatly enlarged but that none of them had disappeared. She stated positively that there had been no preceding eruption which could be likened unto lichen planus. The lesions were pearly white, smooth, with an occasional follicular darker spot. The periphery was normal and the lesions were distinctly atrophic. The patient stated that at no time had the lesions been cardlike. No biopsy had been performed. The mucous membranes were free.

DISCUSSION

Dr. Michelson said that this case was now in its terminal stage; that is, a macular atrophy. It was difficult to state whether there had been a preexisting lichen planus or scleroderma.

Dr. Stokes asked whether the patient could not be persuaded to have a biopsy made.

Dr. Michelson said that he did not believe that a biopsy would throw any light on the etiology or even on the preexisting condition. He had made sections from these cases before, and even when the condition was clinically lichen atrophicus he did not always find a microscopic picture which was characteristic of anything but atrophy.

BASAL CELL SUBCUTANEOUS EPITHELIOMA OF THE SCALP. Presented by Drs. Michelson and Butler.

There was a lesion at the back of the neck of a woman, aged 58. She said that it had begun about five years before and had greatly enlarged, the growth having proceeded more rapidly during the last three months. At the present time the tumor was about 6 cm. in diameter and stood above the plane of the skin about 4 cm. There was no ulceration and the skin overlying the tumor was practically unchanged except for a somewhat darker appearance. The growth was not painful and was stony hard. It was apparently adherent to the skin but freely movable over the underlying tissues. The treatment used had been wide excision and radium. On section the tumor was found to be waxy-white and about the size of a large walnut. Macroscopically, it was encapsulated. It was resistant to the knife and was made up of many lobes. Microscopically, the tumor was of the type that is described as "endothelioma capitis." The cells were deeply staining basophilic and were closely packed with a fine stroma between the lobes. Microscopically, it corresponded to the benign basal cell epithelioma of the scalp as described by Adamson.

DISCUSSION

Dr. Felden said that the tumor had existed for five years and had started to grow during the last two years. The appearance of the tumor had changed somewhat after it has been in liquor formaldehydi. It was perhaps three times as large as it appeared now. Melanotic sarcoma had been considered on account of the color, but the history of the case with the slow development contraindicated that since those melanotic growths, which are, according to Unna's conception and after Bloch's examinations with the Dopa reaction, commonly called nevocarcinoma, have malignant and rapid course, likely to form early metastasis.

The pathologist who was present at the operation and made a frozen section reported a diagnosis of carcinoma intermediate in malignancy between a squamous and basal cell carcinoma, arising from a sebaceous gland and allowing, on account of its sharp demarcation, a good prognosis. Dr. Felden further said that the histologic structure of the tumor made it somewhat difficult to classify this neoplasm definitely since there were no malpighian cells with keratohyalin evolution and epidermic pear formation as in the spinocellular epitheliomas and, on the other hand, there was also not to be found the classical structure of the basocellular epithelioma, which shows an arrangement in narrow irregularly branching tubules and leaflike lobules. The microscopic picture in this case revealed an enormous mass of deep staining cells arranged in broad lobes surrounded by very small and thin strands of connective tissue.

Dr. Michelson said he had seen this tumor only postoperatively, and it corresponded to that group of tumors of the scalp which had been described by Adamson as "benign basal-cell epitheliomas of the scalp." Dr. Michelson said that the question of scalp tumors was not entirely clear, and that many of these cases were diagnosed as endothelioma capitis and sarcoma capitis and a few of them were diagnosed as melanosarcoma. In this case there was little pigmentation. He thought the work of Bloch with the Dopa reaction had conclusively shown that melanotic tumors were all melanotic carcinomas and not sarcomas, for Bloch had shown with his investigation with Dopa that the pigment was derived from the epithelial cells and carried into the corium by so-called melanoblasts; therefore the tumors were epithelial in origin. Microscopically, this tumor was a lobulated, basic staining, cellular tumor. There were cholesterin crystals in the center of some of the lobules. The origin of the tumor had not been ascertained—possibly it was from a sebaceous gland.

D. D. Turnacliff, Secretary

ST. LOUIS DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 12, 1923

Joseph Grindon, M.D., *Presiding*

A CASE FOR DIAGNOSIS. Presented by Dr. Richard Kring from St. John's Clinic.

L. McC., a married woman, aged 44, gave a history of having had two miscarriages, with five children living. At presentation there were dry, scaly patches on the elbows, knees and ankles, and some also in the hair. There

was one shiny, irregular, circinate red patch on the right hand, with a duration of twenty-five years. The urinalysis and the Wassermann test gave negative reactions.

DISCUSSION

Dr. Kring said he believed the lesion on the right hand was a syphilid, on account of its peculiar color and shape; the other lesions looked to him like those of psoriasis.

Dr. Mook said he believed all the lesions were psoriatic.

Dr. Weiss remarked that he had not infrequently observed a circinate type of psoriasis which bore a striking resemblance to a syphilid. In this case there was some scarring on the hand which looked not unlike syphilis, in spite of the negative Wassermann reaction. The other lesions he thought were those of psoriasis.

Dr. Grindon inquired in regard to the results of the husband's Wassermann test.

Dr. Kring replied that the husband had died from alcoholism; also that the patient's son had a Wassermann reaction of + + + + and was under treatment for syphilis.

Dr. Weiss added that the son, 20 years of age, had vitiligo, and also had given a history of having had a chancre. He asked whether it were a case of hereditary syphilis.

Dr. Kring could not reply to that question, as the Wassermann test had been taken elsewhere.

Dr. Greiner said that in his opinion the condition was psoriasis. The tiny hole in the hard palate was perhaps a congenital thing. Syphilis was considered only when the patient was first seen because of the lesion on the hand, but after the case had been studied, the diagnosis of syphilis was discarded.

Dr. Robert Davis remarked that though the lesions on the leg resembled those of syphilis, he was in favor of Dr. Mook's diagnosis of psoriasis.

Dr. Grindon concluded by saying that the condition did not appear to be anything but psoriasis. All had seen psoriasis in syphilitic persons.

A CASE OF LEUKODERMA. Presented by Dr. Richard Kring.

W. D. T., a man, aged 20, son of the foregoing patient, presented a skin discoloration which began at the age of 8. His general health had always been good.

DISCUSSION

Dr. Grindon remarked that it was interesting to note that the patient had a positive Wassermann reaction and had a pronounced case of leukoderma.

A CASE FOR DIAGNOSIS. Presented by Dr. Norman Tobias.

The patient, aged 53, had been a miller in a plate glass factory for fourteen years. The past history was negative. The present condition of the palms began two years ago as a thickening and "cracking" of the skin. Three months ago, the lesions appeared on the inner aspect of the heels. The left hand was involved to a greater extent than the right (the patient being left-handed),

with lesions on the tips of the ring and middle fingers. The condition seemed to improve decidedly during the summer months.

DISCUSSION

DR. MOOK diagnosed the condition as epidermophytosis, which, instead of having much vesiculation, showed an unusual amount of hyperkeratosis. He thought that there was definite epidermophytosis in the groin.

DR. WEISS and DR. BROCKELMANN agreed with Dr. Mook's diagnosis, pronouncing it a hyperkeratotic form of epidermophytosis in the palms, with the ordinary type in the groin.

DR. GRINDON remarked that while both hands were affected, the symmetry was far from perfect.

DR. WILLIAM DAVIS called attention to the fact that the condition was always aggravated in the winter.

DR. TOBIAS said he thought the lesions on the palms were an occupational dermatitis, probably due to friction in handling a heavy iron ladle in the plate glass factory, no doubt an important factor in the production of the palmar lesions. The condition on the heels he thought was due to epidermophytosis.

DR. GRINDON said that the lesions on the heels resembled epidermophytosis, those elsewhere being apparently of a different character, although he would not exclude the possibility of their being identical. Cases may exhibit dermatitis or eczema, although the original, determining factor is the epidermophyton. The fact that the patient in his daily occupation handled a heavy tool would naturally aggravate any skin condition.

A CASE OF EPIDERMOPHYTOSIS OF THE TOES WITH GENERALIZED PAPULOVESICULAR LESIONS. Presented by DR JOSEPH GRINDON.

The patient, a white man, had had for many years macerated epithelium between the toes and especially next each little toe. Two months ago a patch of minute vesicles appeared at the site of an appendectomy scar, and spread rapidly to the size of a silver dollar. At presentation they appeared to be retrogressing. A few days previous to presentation, a number of pinhead vesicles, many in groups, some singly, pruritic at times, appeared over the trunk and postero-external aspects of the arms and forearms. Later these dried with resultant papules.

DISCUSSION

DR. GRINDON said that it was clear to him that the original lesion was an epidermophytosis. Then came a development of vesicles at the site of the appendectomy scar, these also having an appearance of epidermophytosis. The newer lesions, although they also bore a resemblance to epidermophytosis, might perhaps be something else, having a distinctly follicular character.

DR. MOOK diagnosed it as eczematoid dermatitis. He said staphylococcic infection of the skin is usually follicular. There occurs an infection of one or two follicles from scratching, then follows a coalescence of these follicular lesions, which in turn makes the patches observed in this case .

DR. GRINDON remarked that, on the other hand, patches of dermatitis staphylogenica were not present. He thought at first it was a case of dermatitis herpetiformis but he did not remain of that opinion.

DR. MOOK replied that the condition spreads by the coalescing of the follicular lesions which form patches, these in turn coalescing to form larger patches which are irregular in shape. He repeated that he felt it to be a case of dermatitis of staphylococcic origin. The reaction of the staphylococcus is individual, showing itself perhaps in one patient as an abscess, in another as a furuncle or in a third as a secondary dermatitis. He believed this to be an individual skin reaction to staphylococcus.

A CASE FOR DIAGNOSIS. Presented by DR. W. D. DAVIS from Barnard Free Skin and Cancer Hospital.

M. R., a colored woman, aged 36, married, about four months ago had noticed "a small, tender spot" near the midline of the lower lip which appeared after the extraction of a decayed tooth. One month later it was lanced, some suppuration being observed at that time. Since then the lesion had continued to grow. At presentation there was a granulomatous, nodular, papular, and somewhat verrucous eruption extending from the midline on the lower lip, across to the left angle of the mouth, including small areas on the cheek; also a small infiltrated plaque on the inside of the left cheek near the angle of the mouth, with a tendency to grouping of the papules at that site. No miliary abscesses were found, nor "apple jelly" nodules. The Wassermann test had not as yet been made. The patient denied any history of miscarriages.

DISCUSSION

DR. DAVIS said that the patient's history was suggestive of syphilis, although indefinite and inadequate. She had said that her husband was under treatment for an attack of "rheumatism." He was of the opinion that it was a case of late syphilis following the point of least resistance on extraction of the decayed nsequent trauma.

A CASE FOR DIAGNOSIS. Presented by DR. RICHARD S. WEISS from Dr. Engman's Clinic at Washington University Dispensary.

The patient presented gyrate plaques of leukoplakia-like infiltration on the central upper gums, showing slight ulceration. The Wassermann reaction was negative. There was ptosis of the upper eyelid which occurred seven or eight years ago. The teeth had been extracted eight months previously.

DISCUSSION

DR. WEISS said that when he saw the patient the day before presentation, he observed, covering this lesion, a sort of grayish membrane that gave it the appearance of leukoplakia. The lesion on the gums evidently began with two or three circular plaques with a raised border which in growing ran together and produced a more or less gyrate outline, the border being somewhat suggestive of a pearly appearance and having occasionally the appearance of a benign epithelioma.

DR. STRYKER inquired whether any of the dermatologists present had seen benign transitory plaques on the buccal mucosa or on the palate. The thought had occurred to him after hearing Dr. Weiss' remark in regard to the circinate plaques on the hard palate that perhaps it might be a case of "geographic tongue" on the mucous membrane of the mouth.

Dr. Grindon said that he had never seen it in that situation.

Dr. Mook said that he had observed "geographic tongue" in such a case.

A CASE FOR DIAGNOSIS. Presented by Dr. Norman Tobias from Dr. Engman's Clinic at Washington University Dispensary.

A man, aged 20 years, had had a skin affection for three years. His past history was negative. He was a painter's helper. At this time he presented on the face an eruption of noninflammatory, yellowish, somewhat cystic lesions, varying in size from a pinhead to a split pea. Some of the lesions had coalesced. On puncture thick caseous material exuded. Scattered on the face were a few acne papules. Grouped comedones were also seen on the antihelices of the ears. There was a reticulated scarring on the cheeks, probably from an old acne. The patient had had one roentgen ray treatment about ten months before without any appreciable effect.

DISCUSSION

Dr. Robert Davis said he thought it was a sebaceous affection, the sebaceous glands having been clogged, in other words, comedones.

Dr. William Davis said that because of their being multiple cystic lesions, he had thought of milium.

Dr. Brockelmann told of having seen this case a week previously and that he had at that time diagnosed it as a case of milium. He had found it a typical case except that it was more extensive than is usually seen.

Dr. Robert Davis said he thought there were milia scattered among the lesions, but that most lesions were different from the characteristic milium.

Dr. Weiss inquired whether cases of milium were common in Germany.

Dr. Brockelmann replied that they occurred frequently in Vienna, but that he had seen several cases since being in St. Louis.

Dr. Grindon offered a diagnosis of milium or milium-like comedones, probably some of both, other lesions being purely acne.

A CASE FOR DIAGNOSIS. Presented by Dr. T. J. Calhoun from the Barnard Free Skin and Cancer Hospital.

W. D., a man, aged 32, gave a history of an eruption which began fourteen years before on the extremities, spreading gradually over the entire body. The condition was worse during the winter, disappearing almost completely during the spring and summer. For five years the eruption had been present during the entire year. The present attack was the most severe yet experienced. The blood count was normal.

DISCUSSION

Dr. Robert Davis said that his first impression when he saw the case in the clinic was of a sensitization eczema, or seborrheic dermatitis. At that time, a diagnosis of mycosis fungoides did not occur to him. The history of the condition growing worse in the winter and subsiding in the spring and summer did not point to mycosis fungoides. He said that the lesions at first presented a sort of scaly, slightly greasy appearance, which suggested the idea of seborrheic dermatitis. He would therefore, give a tentative diagnosis of sensitization eczema on a seborrheic base, with mycosis fungoides as a possibility.

Dr. Grindon inquired how much insulin the patient had had.

Dr. Robert Davis replied that he had received a number of doses.

Dr. William Davis said that on account of the duration of the skin condition, he had at first agreed with Dr. Robert Davis, as the patient's history was suggestive of seborrheic dermatitis, but that he could not wholly dissociate the appearance of the lesions from those of parapsoriasis. The fact that the condition grew better, then worse, improving under local applications of sulphur and salicylic acid, he thought would justify a diagnosis of seborrheic dermatitis.

Dr. Brockelmann remarked that he felt it necessary to have a little more time for further observation of the case before he could make even a tentative diagnosis. The lesion behind the ear he thought a dermatitis, possibly of a vesicular, papular type.

Dr. Conrad said that when he observed the case a week preivously, he had not noticed the scaling nor the "greasy" appearance (except for the salve). It impressed him as being a type of parapsoriasis. He felt that since he had not seen the case at the beginning, it was rather difficult to make a diagnosis of the condition presented at this time.

Dr. Tobias said he preferred to wait until a biopsy had been made before giving an opinion in the matter.

Dr. Stryker remarked that he had seen the case with Dr. Robt. Davis and that at that time the scales observed on the body, while not confined to the seborrheic areas, were greasy and yellowish, with rather adherent crusts. The areas on the extremities and around the neck were as they appear at this time, only more irritated because seen without any soothing application. At that time he thought it was a sensitization dermatitis with possibly a seborrheic eczema associated. However, the patient's statement that the condition had lasted for fourteen years would almost exclude a diagnosis of seborrheic dermatitis which would hardly have lasted for that length of time. The areas on the body were possibly parapsoriasis of a seborrheic type. The plaques around the neck and on the extremities, particularly the flexor surfaces, resembled sensitization dermatitis. This would suggest the possibility of two distinct conditions in the same person.

Dr. Greiner said he felt that this was one of that type of cases that time alone can clear. His first impression was that it was mycosis fungoides, although further observation was necessary to confirm this diagnosis.

Dr. Kring said that he also would prefer to wait two or three weeks before attempting a definite diagnosis. Being a local condition, he felt that it should be watched carefully to note the results from the application of local remedies.

Dr. Grindon said he favored a diagnosis of seborrheic dermatitis on account of the distinct evidence of a seborrheic condition on the scalp, also the definite yellowish color of the lesions. On the other hand, he felt that he would be against that diagnosis on account of the duration of fourteen years. A diagnosis of sensitization dermatitis might be correct. As to mycosis fungoides, the chief point against that diagnosis was the fact that the condition had existed for fourteen years with slight infiltration. He had seen cases of mycosis fungoides which had lasted for a long time, but never without marked infiltration.

Dr. Conrad inquired whether there had been an appreciable change in the blood picture in fourteen years.

Dr. Brockelmann asked whether the age of the patient was not against that diagnosis.

Dr. Grindon said that he had thought of leukemia cutis until he heard the results of the blood count. As to parapsoriasis, he could not bring himself to that conclusion. In the first place, while in some cases the scaling is not marked, yet there is always more scaling than in this case. Parapsoriasis lesions, especially in a case of long duration, tend to run together so as to give an irregular, variegated, reticular pattern, but there was no such picture in this case. He said his diagnosis would rest between a sensitization dermatitis and mycosis fungoides.

Dr. Conrad asked whether the patient did not have coalescence of a number of the lesions.

Dr. Grindon replied that there were lesions coalescing into large patches in the right popliteum, the forearms, the folds of the neck, etc., but that this was not the reticular appearance sometimes seen in parapsoriasis.

Dr. Greiner recalled a case mentioned by Dr. Foerster which had been diagnosed as dermatitis which finally developed into typical mycosis fungoides. He mentioned this in response to Dr. Brockelmann's question.

Dr. Brockelmann concluded by saying that the lesions seemed to be influenced by the application of salves.

MUNICH DERMATOLOGICAL SOCIETY

Session of June 25, 1923

Dr. Mobitz, *in the Chair*

CONGENITAL PORPHYRINURIA. Dr. Mobitz.

Since the second year of his life the patient had had a dark red urine with a high content of porphyrin. Every summer he had had an attack of hydroa aestivale. The entire body was brown; it became darker during the summer. During the last few years there had been pronounced anemia, the spleen being enlarged down to the umbilicus.

In the discussion, the acute form of porphyrinuria was distinguished from the chronic type. The former generally affects women from 20 to 30 years of age. It is characterized by sudden pain in the epigastrium and an immediate permanent filling of the enlarged duodenum with the bismuth meal shown by roentgenogram. This form is frequently provoked by a prolonged medication of sulphonemethane and sulphonethylmethane. There is no susceptibility to light. Repeated attacks frequently lead to lethal paralysis. Chronic porphyrinuria generally develops in advanced age. There is susceptibility to light but no intestinal disturbance as a rule. Nothing definite is known about the cause of the development of the various porphyrins eliminated by the urine and feces. As colorless preliminary stages of porphyrinuria are known, the urine and feces in every case of hydroa aestivale should be examined.

EROSIO INTERDIGITALIS BLASTOMYCETICA. Dr. Ploeger.

Attention was called to the difficulty in distinguishing these cases from the ordinary mycotic eczemas of the hands. The morphology of the fungi is not pronounced enough to allow definite conclusions.

ARTHRITIS PSORIATICA. Dr. Schumacher.

The case presented showed a relation between psoriasis and arthritis. The patient had suffered from both disturbances for several years. With each attack of arthritis fresh psoriasis eruptions developed. The year before the patient had been practically free from pains in the joints, and the psoriasis lesions had also disappeared. During the two months there has been renewed painful arthritis concomitant with extensive psoriasis eruptions.

LUPUS ERYTHEMATODES DISCOIDES. Dr. Schumacher.

The case showed all stages of the disorder from simple reddening to cicatricial atrophy. The lesions involving the scalp caused alopecia. Nothing pointed to tuberculosis.

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SYPHILOLOGY

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PAGE

423

491

446

459

470

479

482

494

504

521

527

532

538

549